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VOLUME XII NUMBER 1

THE APACHEAN VERB, PART II: THE PREFIXES FOR MODE AND TENSE

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1. Introduction.
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3. The regular (conjunct) imperfective paradigm.
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1. As we have already stated,[1] the tense-modal prefixes of the Apachean verb are found in positions 5, 10, and 11 of the verb construction. In the paragraphs that follow we shall discuss each one of these as they appear in the seven Apachean languages. Our discussion will be confined, however, solely to the formal structure of the Apachean paradigms; a treatment of their functions will be left to a later paper.

2. Verb paradigms in the Apachean languages may be distinguished by the following formal criteria:

(1) The prefixes included in positions 5, 10, and 11 of the verb construction. Only one paradigm has a prefix in position 5 and in this paradigm, the iterative, positions 10 and 11 are not filled. The future paradigm employs one prefix in position 10 (the future tense prefix) and another in position 11 (the prefix for the progressive mode). All the other paradigms have but one prefix in position 11 (none in positions 5 and 10), and in two of these, the regular imperfective and the customary, this prefix is a zero morpheme.

(2) The subject pronoun set employed. There are four such sets, described in the first paper of this series.[2] Set 2 is found only in the h- imperfective paradigm, sets 3 and 4 in the perfective paradigms, while set 1 occurs in all the others.

(3) The stem alternant employed. Only rarely, however, does each paradigm have a distinctive stem alternant; very often two or more paradigms will employ precisely the same stem form. The problem of stem alternation will be treated in more detail in a later paper; here we shall be concerned only with the first two of the criteria listed.

3. Apachean has three imperfective paradigms: the regular (or conjunct) imperfective, the h- (or disjunct) imperfective, and the n- (or completive) imperfective.[3]

The regular imperfective is by far the most frequently employed. It has zero morphemes in all three tense-modal positions and employs subject pronoun set 1. Examples follow:

Nav. verb base di-...-bá·h (only the appropriate stem alternant is given) *to*

[1] See the first paper of this series: The Apachean Verb, Part I: Verb Structure and Pronominal Prefixes, IJAL 11, 193–203 (1945).

[2] Ibid., §8j.

[3] The terms conjunct and disjunct were used by Sapir and also by the author in previous publications. N- imperfectives have not previously been recognized. The prefix ni-, characteristic of this paradigm, has heretofore been regarded as an adverbial of position 9 defining an action moving toward completion. However, since it appears only in the imperfective, it may well be regarded as a modal prefix.

start off to war (zero class)[4]: sg. 1. dìšbá·h, sg. 2. díbá·h, sg. 3. dìbá·h, sg. 4. ǯìdìbá·h, du. 1. dì·bá·h, du. 2. dòhbá·h.

S. C. verb base ni-...-ʔį· *to steal* (zero class): sg. 1. ʔìnšʔį· (ʔi- is the indef. object; ni- is reduced to a syllabic n), sg. 2. ʔíńʔį· (the high tone of the 2nd person subject infects the two preceding prefixes), sg. 3. ʔìnʔį·, sg. 4. čìnʔį·, du. 1. ʔìn·ɬį· (< ʔi-ni-ì·d-ʔį·), du. 2. ʔìnòhʔį·.

Chir. verb base ʔi-...-ʔá *to send for* (ɬ-class): sg. 1. ʔìʔišʔá (the second ʔi- is the indef. object), sg. 2. ʔìʔíłʔá, sg. 3. ʔìʔìłʔá, sg. 4. ʔìʔǯìłʔá (the indef. ʔi- is reduced to a glottal stop), du. 1. ʔìʔì·ɬtá (the stem -ʔá becomes -ɬtá by analogy with zero class verbs in which the final -d of the du. 1. pronoun combines with the stem initial), du. 2. ʔìʔàłʔá (< ʔi-ʔi-ah-ɬ-ʔá).

Mesc. verb base go-...-tà·ł *to sing a ceremony* (zero class): sg. 1. gòštà·ł, sg. 2. gǫ́tà·ł, sg. 3. gòtà·ł, sg. 4. gòčìtà·ł, du. 1. gǫ̀·tà·ł, du. 2. gàhtà·ł.

Jic. verb base ní-...-ʔį́ *to look at* (ɬ- class): sg. 1. níšʔį́, sg. 2. níńłʔį́ (an analogic ń is inserted when the preceding prefix has inherent high tone), sg. 3. yìníłʔį́ (yi-, 3rd person object), sg. 4, čìníłʔį́, du. 1. nį̀·ɬtį́ʔ (-ɬį́ʔ<-ʔį́ by analogy; see Chir. example above), du. 2. náłʔį́.

Lip. verb base ʔi-hó-...-kàʔ *to count* (ɬ- class): sg. 1. ʔóškàʔ, sg. 2. ʔóníłkàʔ (cf. Jic. example above), sg. 3. ʔółkàʔ, sg. 4. ʔìčółkàʔ (< ʔi-či-hó-ɬ-kàʔ; in the other persons ʔi- and hó- have fused), du. 1. ʔǫ́·łkàʔ, du. 2. ʔáłkàʔ (< ʔi-hó-ah-ɬ-kàʔ).

K. A. verb base ...-ɬtè·s *to cook* (ɬ- class): sg. 1. ʔìšɬtè·s (ʔi-, indef. object), sg. 2. ʔį·ɬtè·s, sg. 3. ʔìɬtè·s, sg. 4. ʔìčìɬtè·s, du. 1. ʔį·ɬtè·s, du. 2. ʔàɬtè·s.

4. The h- imperfective is characterized by a prefix hi- (Nav. yi-) in position 11 and by the use of subject pronoun set 2. Zero morphemes are found in positions 5 and 10.

Two types of verbs employ the h- imperfective: verbs having no adverbial prefixes and verbs taking adverbial prefixes which require this paradigm in the imperfective. However, the hi- (Nav. yi-) prefix does not appear in all forms of such verbs. Its appearances are governed by the following rules:

(1) In verbs having no adverbial prefixes hi- (Nav. yi-) appears in all forms except those with second person subject, deictic prefixes, or pronominal prefixes of position 7. In these exceptional forms the second person subject pronoun, deictic prefix, or pronoun object prefix replaces hi- (Nav. yi-).

(2) In verbs with adverbial prefixes requiring the hi- imperfective, hi- (Nav. yi-) is not only replaced as indicated in (1) but it is also elided in the other forms of the verb. In these forms, then, its presence may only be noted by the compensatory lengthening of the vowel of the prefix preceding it.

Nav. verb base ...-tìn *to freeze* (zero class): sg. 1. yìštìn, sg. 2. ǹtìn, sg. 3. yìtìn, sg. 4. ǯìtìn, du. 1. yì·tìn, du. 2. γòhtìn (here yi- + oh- > γòh-). Note also: yìbé·š *it boils* but yìłbé·ž *he boils it* (where yi- in the first example is the modal prefix and yi- in the second is the 3rd person object).

Nav. verb base nà-...-ʔá *to carry a round object here and there* (zero class): sg. 1. nà·šʔá (< nà-yi-š-ʔá), sg. 2. nàǹʔá, sg. 3. nàiʔá (< nà-yi-ʔá; yi-, 3rd person object), sg. 4. nàǯìʔá, du. 1. nàitá (< nà-yi-ì·d-ʔá), du. 2. nàohʔá.

S. C. verb base ...-bìž *to braid* (zero class): sg. 1. hìšbìž, sg. 2. ǹbìž, sg. 3. yìbìž (yi-, 3rd person object), sg. 4. čìbìž, du. 1. hį̀·bìž, du. 2. hòhbìž.

S. C. verb base hi-...-báh *to make gray* (ɬ- class): sg. 1. hì·šbáh (< hi-hi-š-ɬ-báh), sg. 2. hį̀·łbáh (< hi-ni-ɬ-báh; in S. C., the nì- of the 2nd person disappears, leaving the vowel preceding long and nasalized), sg. 3.

[4] There are four verb classes in Apachean marked, respectively, by a zero, ɬ-, d-, and l-prefix in position 13. Details of these classes will be treated in a later paper.

yì·ɬbáh (< yi-hi-ɬ-báh), sg. 4. čì·ɬbáh, du. 1. hi̱·ɬbáh, du. 2. hò·ɬbáh.

Chir. verb base ...-bé·ž *to boil* (ɬ- class): sg. 1. hìšbé·ž, sg. 2. ǹɬbé·ž, sg. 3. yìɬbé·ž (yi-, 3rd person object) (sg. 3. of the intransitive verb: hìbé·ž), sg. 4. ǯìɬbé·ž, du. 1. hì·ɬbé·ž, du. 2. hàɬbé·ž.

Chir. verb base ʔìɬ-ǩé-ni-...-ɬo̱·s *to cut apart* (ɬ- class): sg. 1. ʔìɬkénì·što̱·s, sg. 2. ʔìɬkénìǹɬto̱·s, sg. 3. ʔìɬkêinì·ɬto̱·s (< ʔìɬ-ǩé-yi-ni-hi-ɬ-ɬo̱·s. Here, because the adverbial prefix ni- follows the 3rd person object, the hi- modal prefix is retained. See also sg. 4.), sg. 4. ʔìɬkéǯìnì·ɬto̱·s, du. 1. ʔìɬkénì·ɬto̱·s, du. 2. ʔìɬkénà·ɬto̱·s.

Mesc. verb base ...-ʔè·š *to string beads* (zero class): sg. 1. hìšʔè·š, sg. 2. ǹʔè·š, sg. 3. yìʔè·š, sg. 4. čìʔè·š, du. 1. hi̱·ɬè·š, du. 2. hàhʔè·š.

Mesc. verb base ha-...-ɬò· *to suck out* (ɬ- class): sg. 1. hà·šɬò·, sg. 2. hà̱·ɬɬò· (cf. S. C. above), sg. 3. hàìɬɬò·, sg. 4. hàčìɬɬò·, du. 1. hàìɬɬò·, du. 2. hà·ɬɬò·.

Jic. verb base ...-ʔà·ɬ *to chew* (zero class): sg. 1. hìšʔà·ɬ, sg. 2. ǹʔà·ɬ, sg. 3. yìʔà·ɬ, sg. 4. čìʔà·ɬ, du. 1. hi̱·ɬà·ɬ, du. 2. hàhʔà·ɬ.

Jic. verb base nà·-...-dè·ɬ *to drop* (*rope-like object*) (ɬ- class): sg. 1. nà·šdè·ɬ, sg. 2. nàǹɬdè·ɬ, sg. 3. nàìɬdè·ɬ, sg. 4. nà·čìɬdè·ɬ, du. 1. nà̱·ɬdè·ɬ, du. 2. nà·ɬdè·ɬ.

Lip. verb base ...-ʔá *to send* (*someone*) *on an errand* (ɬ- class): sg. 1. hìšʔá, sg. 2. nìɬʔá, sg. 3. yìɬʔá, sg. 4. čìɬʔá, du. 1. hi̱·ɬʔá, du. 2. hàɬʔá.

Lip. verb base nà·-...-γái *to carry here and there* (zero class): sg. 1. nà·šxái (-γái > -xái by assimilation to preceding š), sg. 2. nà·nìγái, sg. 3. nà·yìγái, sg. 4. nà·čìγái, du. 1. nà·gái, du. 2. nà·xái (< nà·-hi-ah-γái).

K. A. verb base ...-bà·ɬ *to lick* (ɬ- class): sg. 1. hìšbà·ɬ, sg. 2. ⁿdìɬbà·ɬ, sg. 3. yìɬbà·ɬ, sg. 4. čìɬbà·ɬ, du. 1. hi̱·ɬbà·ɬ, du. 2. hàɬbà·ɬ.

K. A. verb base O-là·-...-dà· *to chase* (*someone*) (zero class):[5] sg. 1. bìlà·šdà·, sg. 2. bìlà·nìdà·, sg. 3. yìlà·dà·, sg. 4. bìlà·čidà·, du. 1. bìlà·hi̱·dà· (here the modal prefix does not fuse with the adverbial là·-), du. 2. bìlà·hdà·.

5. The n- imperfective has a prefix ni- in Navaho, San Carlos, Chiricahua, Mescalero, Jicarilla, and Lipan. In Kiowa Apache the prefix may have the form ni- or di-. Whatever its form, the prefix for the n- imperfective disappears when preceded by a pronominal or deictic prefix. In these cases the vowel of the preceding pronoun or deictic receives a high tone (Nav. and Chir.), a high tone plus nasalization (Mesc., Jic., and Lip.), or a high tone plus length and nasalization (S. C. and K. A.). The n-imperfective is required by certain adverbial prefixes. Examples follow.

Nav. verb base O-γà-...-ʔà·h *to take a round object from someone* (d- class): sg. 1. bi̱·γàǹšɬà·h (< bi-γà-ni-š-d-ʔà·h; bi-, 3rd person indirect object. ni- reduces to syllabic n wherever possible), sg. 2. bi̱·γàɬɬà·h sg. 3. yi̱·γàɬɬà·h (< yi-γà-yi-ni-d-ʔà·h. Preceded by yi-, 3rd person object, ni- drops out leaving a high tone on yi-), sg. 4. bi̱·γàǯɬɬà·h (here preceded by the deictic ǯi-, ni- drops out leaving ǯɬ-), du. 1. bi̱·γàǹì·-ɬà·h, du. 2. bi̱·γànòɬɬà·h.

S. C. verb base nì-...dè·ɬ *to throw* (*two objects, a rope*) *down* (ɬ- class): sg. 1. nìǹšdè·ɬ, sg. 2. nìńɬdè·ɬ, sg. 3. ǹyɬ·ɬdè·ɬ (< nì-yi-ni-ɬ-dè·ɬ), sg. 4. ǹčɬ·ɬdè·ɬ, du. 1. nìǹ·ldè·ɬ (< nì-ni-ì·d-ɬ-dè·ɬ. ni- reduces to syllabic n which then is lengthened by the du. 1. subject pronoun. d + ɬ > l), du. 2. ǹnòɬdè·ɬ (< nì-ni-oh-ɬ-dè·ɬ).

Chir. verb base ná-...-ʔà· *to bring a round object back* (zero class): sg. 1. náǹšʔà·, sg. 2. náńʔà·, sg. 3. náíʔà· (< ná-yi-ni-ʔà·), sg. 4. náǯíʔà·, du. 1. náǹ·ɬà·, du. 2. nánáhʔà· (< ná-ni-ah-ʔà·; ni- + ah- takes the high tone by assimilation to the preceding prefix).

Mesc. verb base Oà·-...-ʔà· *to give a round object to someone* (zero class) (Oà·- means any object plus the postposition à·- *to*): sg. 1. bàǹšʔà· (< bi-à·-ni-š-ʔà·),

[5] The symbol O denotes any object prefix.

sg. 2. bàń?à·, sg. 3. yà·yį?à·, sg. 4. bà·čį?à·, du. 1. bàn·ṫà·, du. 2. bà·nàh?à·.

Jic. verb base O-ł-ké-...-?ài *to show a round object to someone* (zero class): sg. 1. bɨłkéńš?ài, sg. 2. bɨłkéń?ài, sg. 3. yɨłkéyį?ài, sg. 4. bɨłkéčį?ài, du. 1. bɨłkéṅ·ṫài, du. 2. bɨłkénàh?ài.

Lip. verb base kì·-...-γà·ł *to look at* (zero class): sg. 1. kì·nišxà·ł (-γà·ł > -xà·ł by assimilation to preceding š), sg. 2. kì·níγà·ł, sg. 3. yìkį·γà·ł (should read: yìkį·γà·ł? From yi-kì·-ni-γà·ł), sg. 4. kì·čį̨γà·ł, du. 1. kì·nį̨·gà·ł (< kì·-ni-ą̨·d-γà·ł), du. 2. kì·nàxà·ł (< kì·-ni-ah-γà·ł).

K. A. verb base nì-...-?à·š *to put a round object down* (zero class): sg. 1. nìdìš?à·š (< nì-di-š-?à·š; in this person the modal prefix has the form di-), sg. 2. nìnį·?à·š (< nì-ni- + the high tone, length, and nasalization which symbolizes the 2nd person subject + -?à·š. Here the modal prefix is ni-), sg. 3. nìyį·?à·š, sg. 4. nìčį·?à·š, du. 1. nìnį·ṫà·š, du. 2. nìdàh?à·š.

It should be noted that the preceding descriptions of Apachean paradigms, as well as those to follow, omit all consideration of irregular and defective forms. Fusions of a very complex nature may occur with respect to the prefixes of positions 7–13 and may involve as well adverbial prefixes of position 3 and the initial stem consonants. Since these morphophonemic phenomena take very different form in each of the seven Apachean languages, it is obviously impossible to describe them adequately in a brief article.

6. The perfective paradigms of the Apachean verb are also three in number: the n- perfective, the h- perfective, and the s- perfective.

n- perfectives are characterized by a prefix ni- or ní- in Navaho, San Carlos, Chiricahua, Mescalero, Jicarilla, and Lipan. In Kiowa Apache the prefix may be ni-, nį·- or di-, dį·-. The n- perfective paradigm employs subject pronouns of set 4 when the verb construction has a zero or ·ł- classifier, and those of set 3 when the classifier is d- or l-. Examples follow.

Nav. verb base nì-...-?ą́ (only the stem characteristic of this paradigm will be given) *to put a round object down* (zero class): sg. 1. ǹní?ą́ (< nì-ni-í-?ą́. The form is actually heard [ǹná?ą́], since the i of the prefix assimilates to the back vowel of the stem), sg. 2. ní·ní?ą́ (< nì-yi-'ní-?ą́. This should theoretically result in nɨ·ní?ą́. The yi- of the 2nd person n- perfective in Nav. [it does not occur in the other languages] is an irregularity caused, perhaps, by analogy with the h- perfective [marked by a yi- prefix in Nav.], q.v.), sg. 3. nɨ·ń?ą́ (< nì-yi-ní-?ą́. yi-, 3rd person object. The n- perfective prefix always has a high tone in 3rd and 4th person forms, a neutral tone in all others), sg. 4. nìžní?ą́ (< nì-ži-ní-?ą́), du. 1. ǹnì·ṫą́, du. 2. ǹnò·?ą́.

Nav. verb base O-γà-...-?ą́ *to take a round object from someone* (d- class): sg. 1. bìγàǹštá, (< bi-γà-ni-š-d-?ą́), sg. 2. bìγáiǹṫą́ (< bì-γà-yi-'ní-d-?ą́), sg. 3. yìγàíṫą́ (< yi-γà-yi-ni-d-?ą́. This is irregular; there should be a high toned ní- in the third person. Cf. the Nav. n- imperfective of this verb given in §5), sg. 4. bìγàžíṫą́ (see note preceding), du. 1. bìγànì·ṫą́, du. 2. bìγànòh?ą́. There is a marked tendency for this n- perfective paradigm to become identical with that for the n- imperfective. This is probably due to the fact that active verbs conjugated in the n- imperfective always have the n- perfective.

S. C. verb base nì-...-dé·l *to throw* (*two objects*; *a rope*) *down* (ɬ- class) (cf. the n- imperfective of this verb given in §5): sg. 1. ǹní·ɬdé·l (< nì-ni-í·-ɬ-dé·l), sg. 2. nɨ́ǹ·ɬdé·l (< nì-ni-'nì-ɬ-dé·l. The ni- perfective prefix and the ni- preceded by high tone of the 2nd person subject both reduce to syllabic n, combine into a long syllabic n, and take the falling tone of the 2nd person subject), sg. 3. ǹyíńɬdé·l (< nì-yi-ń-ɬ-dé·l. yi- acquires the high tone by assimilation to

ń-), sg. 4. ǹčíńłdé·l, du. 1. nìǹ·ldé·l, du. 2. ǹnò·łdé·l.

S. C. verb base ní-ná-...-γòd *to go back to the starting point* (l- class): sg. 1. ǹnáǹšγòd (< nì-ná-ni-š-lγòd), sg. 2. ǹnáǹlγod (< *ǹnáǹ·lγòd by analogy with 2nd person n- imperfective ǹnáǹlγè·d of the same verb), sg. 3. ǹnálγòd (cf. 3rd person n- imperfective ǹnálγè·d), sg. 4. ǹnáčį·lγòd (cf. 4th person n- imperfective ǹnáčį·lγè·d), du. 1. ǹnáǹ·lγòd du. 2. ǹnánòłγòd. Here, as in Navaho, we may note a tendency for d- and l- class n- perfectives to fall together with the n- imperfective. This is also true in the other Apachean languages.

Chir. verb base ná-...-ʔą *to bring a round object back* (zero class): sg. 1. náníʔą, sg. 2. náǹ·ʔą (< a theoretical *náǹ·ʔą), sg. 3. náyíńʔą, sg. 4. nážíńʔą, du. 1. náǹ·tą, du. 2. nánáhʔą (high tone of náh- by assimilation).

Chir. verb base nì-ná-...-gò *to swoop back [as in flying] to the starting point* (d- class): sg. 1. ǹnáǹšgò, sg. 2. ǹnáǹ·gò (cf. 2nd person n- imperfective ǹnáńgè·), sg. 3. ǹnágò (cf. 3rd person n- imperfective ǹnágè·), sg. 4. ǹnážígò (cf. 4th person n- imperfective ǹnážígè·), du. 1. ǹnáǹ·gò, du. 2. ǹnánàhgò.

Mesc. verb base Oà·-...-ʔą *to give a round object to someone* (zero class): sg. 1. bà·níʔą, sg. 2. báǹ·ʔą (< a theoretical *bàǹ·ʔą. Here is an unusual assimilation, for an inherent tone, such as that of the postposition à·- *to*, does not usually change. Cf. the Nav. d- class 2nd person n- perfective above), sg. 3. yà·yíńʔą, sg. 4. bà·číńʔą, du. 1. bàǹ·tą, du. 2. bà·nàʔą.

Mesc. verb base ná-...-yá *one person returns* (d- class; d + y > ʒ): sg. 1. náǹšʒá, sg. 2. náǹ·ʒá, sg. 3. nąʒá, sg. 4. náčįʒá. ná-...-ʔá·ž *two persons return* (d- class): du. 1. náǹ·tá·ž, du. 2. nánàhtá·ž.

Jic. verb base O-ł-ké-...-ʔą *to show a round object to someone* (zero class); sg. 1. bìłkéńéʔą, sg. 2. bìłkéǹ·ʔą, sg. 3. yìłkéińʔą (< yi-ł-ké-yi-ń-ʔą), sg. 4. bìłkéšńʔą (< bi-ł-ké-či-ń-ʔą. či- reduces to š), du. 1. bìłkéǹ·tą, du. 2. bìłkénàʔą.

Jic. verb base Oà·-ná·-...-γį *to carry a burden to someone again* (d- class; d + γ > g) sg. 1. bà·ná·nìšgį, sg. 2. bà·ná·ǹ·gį, sg. 3. yà·ná·yįgį, sg. 4. bà·ná·čįgį, du. 1. bà·ná·ǹ·gį, du. 2. bà·ná·nàhgį.

Lip. verb base kì·-...-γàł *to look at* (zero class): sg. 1. kì·níγàł, sg. 2. kì·nínìγàł, sg. 3. yìkì·níγàł, sg. 4. kì·šníγàł (< kì·-či-ní-γàł), du. 1. kì·nį·gàł, du. 2. kì·nàxàł.

Lip. verb base ná-...-γái *to carry (a load) back* (d- class; d + γ > g): sg. 1. nánìšgái, sg. 2. nánínìgái, sg. 3. náyįgái, sg. 4. náčįgái, du. 1. nánį·gái, du. 2. nánàhgái.

K. A. verb base nì-...-ʔą *to put a round object down* (zero class): sg. 1. nìdé·ʔą (< nì-di-é·-ʔą; the perfective prefix is di-), sg. 2. nìní·díʔą (< nì-ni-'dí-ʔą. Perfective prefix ni-; 2nd person subject 'dí-. I cannot explain the length of ní·-), sg. 3. nì·nį·ʔą (< nì-yi-nį·-ʔą), sg. 4. nìčìnį·ʔą, du. 1. nìnį·tą, du. 2. nìdàʔą.

K. A. verb base dá-ná·-...-žá· *one person comes back again* (d- class; d + ž > š): sg. 1. dáná·dišžá· (high tone of di-, perfective prefix, by assimilation), sg. 2. dáná·nį·žá· (cf. 2nd person n- imperfective: dáná·nį·dá·š), sg. 3. dáná·žá· (cf. 3rd person n- imperfective: dáná·dá·š), sg. 4. dáná·čį·žá·.

7. The h- perfective paradigm is characterized by the prefix yi- or yí·- in Navaho, hi- or hį·- in San Carlos and Jicarilla, ho- or hó·- in Chiricahua, ho- or hǫ·- in Mescalero and Lipan, and γi- or γį·- in Kiowa Apache. As with the n- perfective, pronoun set 4 is used when the classifier is zero or ł- and pronoun set 3 when the classifier is d- or l-. Examples follow.

Nav. verb base ...-ʔá *to have a rigid object (e.g. an arrow) extending* (ł- class): sg. 1. yíłʔá (< yi-í-ł-ʔá), sg. 2. yíńłʔá (< yi-'ní-ł-ʔá. Cf. the 2nd person of the n- perfective), sg. 3. yìyí·łʔá (< yi-yí·-ł-ʔá. The high toned variants of this prefix always occur only in the 3rd and 4th persons), sg. 4. ží·łʔá (< ži-yí·-ł-ʔá. The h- perfective prefix is here absorbed by the preceding

prefix. See also examples below), du. 1. yì·lʔá (< yi-ì·d-ɬ-ʔá), du 2. γò·ɬʔá (< yi-ò·-ɬ-ʔá).

Nav. verb base ha-...-nìž *to pull out* (*e.g. a weed*) (zero class); sg. 1. há·nìž (< ha-yi-í-nìž), sg. 2. háińnìž (< ha-yi'ń-nìž), sg. 3. hàyí·nìž (< ha-yi-yí·-nìž; cf. the 3rd person of the example preceding), sg. 4. hàží·nìž, du. 1. hàiǹìž (< ha-yi-ì·d-nìž; d + n > ǹ), du. 2. hàonìž (< ha-yi-ò·-nìž).

Nav. verb base yi-...-γè·ž *to stoop over* (l- class): sg. 1. yì·šγè·ž (< yi-yi-š-l-γè·ž), sg. 2. yìnlγè·ž (here the subject pronoun is apparently nì-, that used with pronoun set 2), sg. 3. yì·lγè·ž (the characteristic high tone of the h- perfective prefix in the 3rd and 4th persons is lacking in d- and l- class verbs), sg. 4. žì·lγè·ž, du. 1. yì·lγè·ž, du. 2. yò·ɬγè·ž.

In some zero and ɬ- class verbs we find an aberrant form of the h- perfective not unlike that used in d- and l- class verbs. Thus, for example, the Nav. verb base ná-di-...-ʔą́ *to pick up a round object* (zero class): sg. 1. nádì·ʔą́ (dì·- < di- plus a 1st person form of the h- perfective), sg. 2. nádìnìʔą́ (note the low tone of the 2nd person subject), sg. 3. nâidì·ʔą́ (again a low tone in the 3rd and 4th persons), sg. 4. nážđì·ʔą́ (náž- < ná- + ži-), du. 1. nádì·ɬą́, du. 2. nádò·ʔą́.

S. C. verb base hi-...-bà· *to make gray* (ɬ- class): sg. 1. hí·ɬbà· (< hi-hi-í-ɬ-bà·), sg. 2. híńɬbà· (< hi-hi-'ǹ-ɬ-bà·; should the form read hí·ǹɬbà·?), sg. 3. yį́·ɬbà· (< yi-hi-hį́·-ɬ-bà·), sg. 4. čį́·ɬba·, du. 1. hį̀·lbà· (< hi-hi-į̀·d-ɬ-bà·), du. 2. hò·ɬbà· (< hi-hi-ò·-ɬ-bà·).

S. C. verb base ná-di-...-ʔą́· *to pick up a round object* (zero verb): sg. 1. nádì·ʔą́·, sg. 2. nádìn ʔą́·, sg. 3. nâiǹʔą́· (under certain circumstances in this language di- > a syllabic n), sg. 4. náčìnʔą́·, du. 1. nádį̀·ɬą́·, du. 2. nádò·ʔą́·.

S. C. verb base bé- (or yé-)dàh-hi-...-γòd *to run up* (*e.g. a hill*) (l- class): sg. 1. bédàhì·šγòd, sg. 2. bédàhìnlγòd, sg. 3. yédàhį̀·lγòd, sg. 4. bédàhčį̀·lγòd, du. 1. bédàhìhį̀·lγòd, du. 2. bédàhò·ɬγòd.

Chir. verb base ...-ⁿdá *to lick* (ɬ- class): sg. 1. hó·ɬⁿdá (< ho-í-ɬ-ⁿdá), sg. 2. hóǹɬⁿdá (< ho-'ǹ-ɬ-ⁿdá), sg. 3. yó·ɬⁿdá (< yi-hó·-ɬ-ⁿdá), sg. 4. žó·ɬⁿdá, du. 1. hò·ɬⁿdá, du. 2. hà·ɬⁿdá.

But in verb bases like ná-di-...-ʔą́ *to pick up a round object* (zero class), we find an h-perfective paradigm similar to those in Navaho and San Carlos. Sg. 1. nádì·ʔą́, sg. 2. náǹ·ʔą́ (ǹ·- > di- + ni-), sg. 3. nâiǹʔą́, sg. 4. nášǹʔą́ (< ná-ži-di- + the h- perfective prefix + -ʔą́), du. 1. náǹ·tą́, du. 2. nádà·ʔą́.

Chir. verb base Oà·-ha-ʔi-...-γò *to get away from someone* (l- class): sg. 1. bà·hàʔò·šγò, sg. 2. bà·hàʔóǹɬγò, sg. 3. yà·hàʔò·ɬγò, sg. 4. bà·hàʔžàɬγò (žàɬ- < ži- + h- perfective prefix + ɬ), du. 1. bà·hàʔò·ɬγò, du. 2. bà·hàʔà·ɬγò.

Mesc. verb base ʔi-...-ʔą́ *to put a round object into* (*e.g. a box*) (zero class): sg. 1. ʔó·ʔą́, sg. 2. ʔóǹʔą́, sg. 3. ʔlyǫ́·ʔą́, sg. 4. ʔlčǫ́·ʔą́, du. 1. ʔǫ̀·tą́, du. 2. ʔà·ʔą́.

Mesc. verb base ná-di-...-ʔą́ *to pick up a round object* (zero class); sg. 1. nádì·ʔą́, sg. 2. náǹ·ʔą́, sg. 3. nâiǹʔą́, sg. 4. nášǹʔą́, du. 1. nádį̀·tą́, du. 2. nádà·ʔą́.

Mesc. verb base ʔi-ná·...-yá *one person goes in again* (d- class; d + y > ʒ): sg. 1. ʔìnâošʒá, sg. 2. ʔìnâoǹʒá, sg. 3. ʔìnâoʒá, sg. 4. ʔìnáčàʒá.

Jic. verb base γèh-...-ʔą́ *to put a round object inside* (zero class): sg. 1. γèhéʔą́ (< γèh-hi-é-ʔą́), sg. 2. γèhíǹʔą́ (< γèh-hi-'ǹ-ʔą́), sg. 3. γèhyį́·ʔą́ (< γèh-yi-hį́·-ʔą́), sg. 4. γèhčį́·ʔą́, du. 1. γèhį̀·tą́, du. 2. γèhà·ʔą́.

Jic. verb base Oè·-ná·ʔ-go-...-ʔą́ *to bet, wager with someone* (zero class): sg. 1. bè·ná·ʔgò·ʔą́, sg. 2. bè·ná·ʔgòǹʔą́, sg. 3. yè·ná·ʔgǫ̀·ʔą́, sg. 4. bè·ná·ʔgòčį̀·ʔą́, du. 1. bè·ná·ʔgǫ̀·tą́, du. 2. bè·ná·ʔgà·ʔą́.

Jic. verb base ná·-hi-...-yį́ *to carry a burden again* (d- class; d + γ > g); sg. 1. ná·hì·šgį́, sg. 2. ná·hìǹgį́, sg. 3. ná·yį̀·gį́, sg. 4. nà·čį̀·gį́, du. 1. ná·hį̀·gį́, du. 2. ná·hà·hgį́.

Lip. verb base ...-ʔá *to send on an errand* (ɬ- class): sg. 1. hó·ɬʔá, sg. 2. hó·nìɬʔá, sg. 3. yǫ́·ɬʔá, sg. 4. ǩǫ́·ɬʔá, du. 1. hǫ̀·ɬʔá, du. 2. hà·ɬʔá.

Lip. verb base ná-di-...-ʔą́ *to pick up a round object* (zero class): sg. 1. nádì·ʔą́, sg. 2. nádìnìʔą́, sg. 3. nâidį̀·ʔą́, sg. 4. nášdį̀·ʔą́, du. 1. nádį̀·ɬą́, du. 2. nádà·ʔą́.

Lip. verb base Oì·-O-ɬ-go-...-nìh *to tell about something to someone* (1- class): sg. 1. bì·bìɬgò·šnìh, sg. 2. bì·bìɬgó·nìɬnìh, sg. 3. yì·yìɬgǫ́·ɬnìh, sg. 4. bì·bìɬgòǩǫ́·ɬnìh, du. 1. bì·bìɬgǫ̀·ɬnìh, du. 2. bì·bìɬgà·ɬnìh. In Lipan, apparently, the low toned 3rd and 4th person variants of the h- perfective prefix do not occur in d- and l- class verbs.

K. A. verb base O-ɬ-di-...-nì? *to say to someone* (zero class): sg. 1. bìɬdìγé·nì? (< bi-ɬ-di-γi-é·-nì?), sg. 2. bìɬdìγé·ⁿdínì? (< bi-ɬ-di-γi-·ⁿdí-nì?. Why is the vowel of the perfective prefix long? Cf. Lip. ...-ʔá *to send on an errand*, 2nd person, above), sg. 3. yìɬdìγǫ́·nì?, sg. 4. bìɬčìγǫ́·nì?, du. 1. bìɬdìγǫ̀·hnì?, du. 2. bìɬdìγànì?.

K. A. verb base dà?-di-...-ʔą́ *to put a round object on top* (zero class): sg. 1. dà?dì·ʔą́, sg. 2. dà?dì·ⁿdìʔą́, sg. 3. dà?yìdį̀·ʔą́, sg. 4. dà?ǩìdį̀·ʔą́, du. 1. dà?dìγį̀·ɬą́, du. 2. dà?dà·ʔą́.

K. A. verb base dá-di-...-žá· *one person gets up* (d- class; d + ž > ǯ): sg. 1. dádì·ǯá·, sg. 2. dádį̀·ǯá·, sg. 3. dádì·ǯá·, sg. 4. dáǩìdì·ǯá· dá-di-...-ʔá·š *two persons get up* (d- class): du. 1. dádìγį̀·ɬá·š, du. 2. dádà·hɬá·š.

8. The s- perfective is marked in all the Apachean languages by a prefix si-. When this prefix, in the third and fourth person, is preceded by another prefix having the form cv, it is reduced to z- in Navaho and San Carlos, and to s- in the other Apachean languages. In Navaho and San Carlos, however, the reduced form z-, combined with a following ɬ-, l-, or d- classifier, becomes s-. Like the other two perfective paradigms, the s- perfective employs subject pronoun set 4 in zero and ɬ- class verbs and pronoun set 3 in those with a d- or l- classifier.

Nav. verb base ...-dá *one being sits* (zero class): sg. 1. sídá (< si-í-dá), sg. 2. síndá (< si-'ń-dá), sg. 3. sìdá, sg. 4. ǯìzdá (< ǯi-si-dá). Verb base ...-ké *two beings sit* (zero class): du. 1. sì·ké (< si-ì·d-ké), du. 2. sò·ké (< si-ò·-ké).

Nav. verb base O-...-dá *to hold one person while he is seated* (ɬ- class): sg. 1. bìséɬdá (é- a free alternant of í-), sg. 2. bìsínɬdá, sg. 3. yì·sdá (< yi-si-ɬ-dá), sg. 4. bìǯìsdá (< bi-ǯi-si-ɬ-dá), du. 1. bìsì·ldá (< bi-si-ì·d--ɬ-dá), du. 2. bìsò·ɬdá.

Nav. verb base nà-...-nà? *to crawl here and there* (d- class): sg. 1. ìnsìšńa? (< nà-si-š-d-nà?. nà- reduces to ì; d + n > ń), sg. 2. ìnsíńńà?, sg. 3. nà·sńà? (< nà-si-d-nà?. nà- + si- > nà·s-, not *nàs-. Compensatory vowel length occurs only when position 3 prefixes combine with si-), sg. 4. ìnǯìsńà?, du. 1. ìnsì·ńà?, du. 2. ìnsò·hńà?.

Nav. verb base nà-...-ʔìz *to step along quietly here and there* (l- verb): sg. 1. ìnsìšʔìz, sg. 2. ìnsíníl?ìz, sg. 3. nà·sʔìz, sg. 4. ìnǯìsʔìz, du. 1. ìnsì·lʔìz, du. 2. ìnsò·lʔìz.

There are a number of cases in which the s- perfective prefix fuses with a preceding adverbial prefix of position 9. We cannot illustrate all of these but the following examples will illustrate the most frequently occurring fusions of this kind.[6]

Nav. verb base di-...-bà·? *to start off to war* (zero class): sg. 1. débà·? (< di-si-í-bà·?. di- + si- > de-), sg. 2. díńbà·? or déńbà·? (< di-si-'ń-bà·?), sg. 3. dè·zbà·? (< di-si-bà·?. Should result in *dì·zbà·?; the e-color of the vowel is analogic), sg. 4. ǯìdè·zbà·?, du. 1. dè·bà·? (< di-si-ì·d-bà·?), du. 2. sìdò·bà·? (here si- is out of place; the form, in terms of this fusion, should be *dò·bà·? < di-si-ò·-bà·?).

Nav. verb base nà-ni-...-ʔį́·? *to keep*

[6] For a more detailed study of this morphophonemic process in Navaho, see my Navaho Phonology, University of New Mexico Publications in Anthropology, no. 1 (1945), pp. 48–55.

[*oneself*] *hidden* (d- class): sg. 1. nànéšt̨ʸ·ʔ (< nà-ni-si-š-d-ʔi̯·ʔ. High tone of néš- by analogy with other 1st person s- perfectives), sg. 2. nànínt̨ʸ·ʔ (< nà-ni-si-'n-d-ʔi̯·ʔ), sg. 3. nànè·st̨ʸ·ʔ (< nà-ni-si-d-ʔi̯·ʔ), sg. 4. nàžnè·st̨ʸ·ʔ (< nà-ži-ni-si-d-ʔi̯·ʔ), du. 1. nànè·t̨ʸ·ʔ (< nà-ni-si-ì·d-d-ʔi̯·ʔ), du. 2. nàsìnòht̨ʸ·ʔ.

S. C. verb base nà·-...-ʔą́· *to carry a round object here and there* (zero class) sg. 1. nà·sí·ʔą́·, sg. 2. nà·sín ʔą́·, sg. 3. nà·yì·zʔą́·, sg. 4. nà·čìzʔą́· (there appears to be no good reason for compensatory length in yi- + si- > yì·z- [3rd person subject with 3rd person object yi-] and the lack of it in či- + si- > čìz-), du. 1. nà·sį̀·tą́·, du. 2. nà·sò·ʔą́·.

S. C. verb base ...-ʔà ʔ *to send on an errand* (ɬ- class): sg. 1. sí·ɬʔà ʔ, sg. 2. sínɬʔà ʔ, sg. 3. yìsʔà ʔ, sg. 4. čìsʔà ʔ, du. 1. sį̀·lʔà ʔ, du. 2. sò·ɬʔà ʔ.

S. C. verb base hà·-ná-...-gòd *to come back* (l- class): sg. 1. hà·násišgòd, sg. 2. hà·násínlgòd, sg. 3. hà·nâ·sgòd, sg. 4. hà·náčisgòd, du. 1. hà·násį̀·lgòd, du. 2. hà·násòłgòd.

S. C. verb base nà·-di-...-gòd *to run across* (*e.g. a stream*) (di- + si- > de-): sg. 1. nà·dé·šgòd, sg. 2. nà·déìlgòd, sg. 3. nà·dè·sgòd, sg. 4. nà·čìdè·sgòd, du. 1. nà·dę̀·lgòd, du. 2. nà·dè·sòłgòd (< nà·-di-si-oh-l-gòd. Here dè·-, where there should be di-, is analogic).

Chir. verb base nà·-go-...-ʔą́ *to make plans* (zero class): sg. 1. nà·gòsíʔą́, sg. 2. nà·gòsínʔą́, sg. 3. nàgò·sʔą́, sg. 4. nà·gòžì·sʔą́, du. 1. nà·gòsì·t̨ą́, du. 2. nà·gòsàhʔą́.[7]

Chir. verb base di-...-ʔą́ *to start to carry a round object* (zero class) (di- + si- > de-): sg. 1. déʔą́, sg. 2. déìʔą́, sg. 3. yìdè·sʔą́, sg. 4. žìdè·sʔą́, du. 1. dè·t̨ą́, du. 2. déʔą́ (the high tone of the prefix dá- [< di-si-a-] is an irregularity peculiar to some of the Apachean languages).

[7] Compensatory lengthening occurs in the third and fourth persons of Chir. s- perfective paradigms when prefixes of any position occur before si-. The same is true of Mesc., Jic., and Lip. K. A. follows the Nav. pattern.

Chir. verb base ní-...-ʔàh *to buteher* (*e.g. an animal*) (ɬ- class): sg. 1. ńsíɬʔàh, sg. 2. ńsínɬʔàh, sg. 3. ńyì·sʔàh, sg. 4. ńžì·sʔàh, du. 1. ńsì·ɬʔàh, ńsàɬʔàh.

Chir. verb base hà-...-tį̀· *to be old* (d- class): sg. 1. hàsištį̀·, sg. 2. hàsíntį̀·, sg. 3. hà·stį̀·, sg. 4. hàžì·stį̀·, du. 1. hàsì·htį̀·, du. 2. hàsàhtį̀·.

Mesc. verb base ʔé-go-...-dį̀· *to disappear, to become finished, to die* (ɬ- class): sg. 1. ʔégòsíɬdį̀·, sg. 2. ʔégòsínɬdį̀·, sg. 3. ʔégò·sdį̀·, sg. 4. ʔégòčì·sdį̀·, du. 1. ʔégòsį̀·ldį̀·, du. 2. ʔégòsàɬdį̀·.

Mesc. verb base di-...-dǫ́·ʒ *to crawl* (zero class) (di- + si- > de-): sg. 1. dédǫ́·ʒ, sg. 2. déìndǫ́·ʒ, sg. 3. dè·sdǫ́·ʒ, sg. 4. čìdè·sdǫ́·ʒ, du. 1. dę̀·dǫ́·ʒ, du. 2. dádǫ́·ʒ.

Mesc. verb base Oé-ná-...-ⁿdàh *to forget about something* (l- class): sg. 1. bénásišⁿdàh, sg. 2. bénásínɬⁿdàh, sg. 3. yénásⁿdàh, sg. 4. bénáčì·sⁿdàh, du. 1. bénásį̀·lⁿdàh, du. 1. bénásàlⁿdàh.

Jic. verb base ...-bìš *to braid* (zero class): sg. 1. sébìš, sg. 2. sínbìš, sg. 3. yì·sbìš, sg. 4. čì·sbìš, du. 1. sį̀·bìš, du. 2. sàbìš.

Jic. verb base ...-béš *to boil* (ɬ- class): sg. 1. sélbéš, sg. 2. sínɬbéš, sg. 3. yì·sbéš, sg. 4. čì·sbéš, du. 1. sį̀·ɬbéš, du. 2. sàlbéš.

Jic. verb base nà·-ni-...-ʔį́ *to hide* [*oneself*] (d- class) (ni- + si- > ne-): sg. 1. nà·néšt̨ʸ́ʔ, sg. 2. nà·néìnt̨ʸ́ʔ, sg. 3. nà·nè·st̨ʸ́ʔ, sg. 4. nà·čìnè·st̨ʸ́ʔ, du. 1. nà·nę̀·t̨ʸ́ʔ, du. 2. nà·nát̨ʸ́ʔ (cf. Chir. 2nd person du. of di-...-ʔą́).

Jic. verb base Oé-...-báiʔ *to wear* (*e.g. a scarf*) *about one's neck* (l- class): sg. 1. bésišbáiʔ, sg. 2. bésínɬbáiʔ, sg. 3. yésbáiʔ, sg. 4. béčì·sbáiʔ, du. 1. bésį̀·ɬbáiʔ, du. 2. bésàɬbáiʔ.

Lip. verb base nà·-...-ʔàh *to send* [*someone*] *here and there* (ɬ- class): sg. 1. nà·síɬʔàh, sg. 2. nà·sínɬʔàh, sg. 3. nà·yì·sʔàh, sg. 4. nà·čì·sʔàh, du. 1. nàsį̀·lʔàh, du. 2. nà·sàlʔàh.

Lip. verb base O-kì·-di-...-ⁿdił *to spread things over something* (zero class) (di- + si- > di-): sg. 1. bìkì·díⁿdił, sg. 2. bìkì·dínⁿdił, sg. 3. yìkì·dì·sⁿdił, sg. 4. bìkì·šdì·sⁿdił (< bi-kì·-či-di-si-ⁿdił), du. 1. bìkį̀·di·hⁿdił

(misheard for bìkì·dį·hⁿdił?), du. 2. bìkì·dáⁿdił.

Lip. verb base O-ɬ-nà·-...-dà· *to chase, pursue, hunt* (d- class): sg. 1. bɬnà·sìšdà·, sg. 2. bɬnà·sínìdà·, sg. 3. yɬnà·sdà·, sg. 4. bɬnà·čì·sdà·, du. 1. bɬnà·sį·dà·, du. 2. bɬnà·sàhdà·.

K. A. verb base ⁿdà·-...-bé· *to swim* (zero class): sg. 1. ⁿdà·sé·bé·, sg. 2. ⁿdà·síníbé·, sg. 3. ⁿdà·sbé·, sg. 4. ⁿdà·čìsbé·, du. 1. ⁿdà·sį·bé·, du. 2. ⁿdà·sàbé·.

K. A. verb base di-...-ʔą́· *to start to carry a round object* (zero class) (di- + si- > de- or da-): sg. 1. dé·ʔą́·, sg. 2. dá·ⁿdíʔą́·, sg. 3. yìdè·sʔą́·, sg. 4. čìdè·sʔą́·, du. 1. dą́·tą́·, du. 2. dà·ʔą́·. There are several significant variations in this paradigm as compared with the other Apachean languages. Note especially the sg. 2, du. 1, and du. 2 forms.

K. A. verb base O-kà-di-...-gè·š *to choose, select* (d- class) (di- + si- > de- or da-): sg. 1. bìkàdé·šgè·š, sg. 2. bìkàdá·ⁿdígè·š, sg. 3. yìkàdè·sgè·š, sg. 4. bìkàšdè·sgè·š, du. 1. bìkàdą·gè·š, du. 2. bìkàdà·hgè·š.

9. The progressive paradigm is characterized by a position 11 prefix which has the form yi- in Navaho, hi- in San Carlos and Jicarilla, ho- in Chiricahua, Mescalero, and Lipan, and ɣi- in Kiowa Apache. The paradigm employs subject pronoun set 1.

Nav. verb base ...-ʔá·ɬ *to carry a round object* (zero class): sg. 1. yìšʔá·ɬ, sg. 2. yíʔá·ɬ, sg. 3. yò·ʔá·ɬ (< yi-, 3rd person object; yi-, progressive, and -ʔá·ɬ, stem. yi- + yi- > yò·-, an irregular contraction. Cf. yìʔá·ɬ *a round object moves along*), sg. 4. ǯò·ʔá·ɬ (< ǯi- + yi- + -ʔá·ɬ), du. 1. yì·tá·ɬ, du. 2. ɣòhʔá·ɬ (ɣòh- < yi-, progressive, + oh-, 2nd person du. subject).

Following an adverbial prefix, the progressive prefix is absorbed. Nav. ná-...-dǫ́·s *to whirl around* (d- class): sg. 1. ná·šdǫ́·s (< ná-yi-š-d-dǫ́·s) sg. 2. ná·dǫ́·s (< ná·yí-d-dǫ́·s), sg. 3. ná·dǫ́·s (< ná-yi-d-dǫ́·s), sg. 4. náǯò·dǫ́·s, du. 1. nâidǫ́·s (< ná-yi-ì·d-d-dǫ́·s), du. 2. ná·hdǫ́·s (< ná-yi-oh-d-dǫ́·s).

S. C. verb base ...-ʔá·ɬ *to carry a round object* (zero class): sg. 1. hìšʔá·ɬ, sg. 2. hį́·ʔá·ɬ, sg. 3. yò·ʔá·ɬ (cf. hìʔá·ɬ *a round object moves along*), sg. 4. čò·ʔá·ɬ, du. 1. hì·tá·ɬ, du. 2. hòhʔá·ɬ.

S. C. verb base Oè·-go-...-ʔá·ɬ *to have something (e.g. a game) going on* (zero class) sg. 1. bè·gò·šʔá·ɬ (gò·š- < go-hi-š-), sg. 2. bè·gǫ́·ʔá·ɬ (gǫ́·- < go-hį́·-), sg. 3. yè·gò·ʔá·ɬ (gò·- < go-hi-), sg. 4. bè·gòčò·ʔá·ɬ, du. 1. bè·gǫ·tá·ɬ (< bè·-go-hį·-d-ʔá·ɬ), du. 2. bè·gò·hʔá·ɬ (gò·h- < go-hòh-).

Chir. verb base ...-ʔá·ɬ *to carry a round object* (zero class): sg. 1. hòšʔá·ɬ, sg. 2. hóʔá·ɬ, sg. 3. yàʔá·ɬ (cf. hòʔá·ɬ *a round object moves along*), sg. 4. ǯàʔá·ɬ, du. 1. hò·tá·ɬ, du. 2. hàhʔá·ɬ.

Chir. verb base ná-...-ʔá·ɬ *to bring a round object back* (zero class): (for analysis simply add ná- to each of the forms listed in the preceding paragraph) sg. 1. nô·šʔá·ɬ, sg. 2. nó·ʔá·ɬ, sg. 3. náyàʔá·ɬ, sg. 4. náǯàʔá·ɬ, du. 1. nô·tá·ɬ, du. 2. ná·hʔá·ɬ.

Mesc. verb base ...-ʔá·ɬ *to carry a round object* (zero class): sg. 1. hòšʔá·ɬ, sg. 2. hǫ́ʔá·ɬ, sg. 3. yàʔá·ɬ (cf. hòʔá·ɬ *a round object moves along*), sg. 4. čàʔá·ɬ, du. 1. hǫ·tá·ɬ, du. 2. hàhʔá·ɬ.

Mesc. verb base ná·-ʒi-...-ɬih *to go again* (zero class): sg. 1. ná·ʒò·štìh, sg. 2. ná·ʒǫ́·ɬih, sg. 3. ná·ʒàɬih, sg. 4. ná·čiʒàɬih, du. 1. ná·ʒǫ·ɬih, du. 2. ná·ʒà·hɬih.

Jic. verb base ...-ʔáɬ *to carry a round object* (zero class): sg. 1. hìšʔáɬ, sg. 2. hį́ʔáɬ, sg. 3. yà·ʔáɬ (cf. hìʔáɬ *a round object moves along*), sg. 4. čà·ʔáɬ, du. 1. hì·táɬ, du. 2. hàhʔáɬ.

Jic. verb base ná-...-ʔáɬ *to bring a round object back* (zero class): sg. 1. nâ·šʔáɬ, sg. 2. ná·ʔáɬ, sg. 3. náyà·ʔáɬ, sg. 4. náčà·áɬ, du. 1. nâ·táɬ, du. 2. ná·hʔáɬ.

Lip. verb base ...-áɬ *to carry a round object* (zero class): sg. 1. hòšʔáɬ, sg. 2. hǫ́ʔáɬ, sg. 3. yàʔáɬ (cf. hòʔáɬ *a round object moves along*), sg. 4. čàʔáɬ, du. 1. hǫ·táɬ, du. 2. hòhʔáɬ.

Lip. verb base ʔi-...-ʒį́s *to swim* (zero class): sg. 1. ʔò·šʒį́s, sg. 2. ʔǫ́·ʒį́s, sg. 3.

ʔàʒís, sg. 4. ʔìčàʒís, du. 1. ʔǫ̀·ʒís, du. 2. ʔà·hʒís.

K. A. verb base ...-ʔá·ɬ *to carry a round object* (zero class): sg. 1. γìšʔá·ɬ, sg. 2. γį́·ʔá·ɬ, sg. 3. yàʔáɬ (cf. γìʔá·ɬ *a round object moves along*), sg. 4. čàʔá·ɬ, du. 1. γį̀·ṫá·ɬ, du. 2. γàhʔá·ɬ.

K. A. verb base čì-...-ṫìš *to run* (zero class): sg. 1. čìγìšṫìš, sg. 2. čìγíṫìš, sg. 3. čàṫìš, sg. 4. čìčàṫìš, du. 1. čìγį̀·ṫìš, du. 2. čìγàhṫìš.

Note that in Kiowa Apache a preceding adverbial prefix absorbs the progressive prefix only in the third person.

10. The future paradigm is formed in all the Apachean languages by adding a prefix di-, in position 10, to the progressive paradigm. Except in Kiowa Apache, di-, the progressive prefix, and the subject pronoun prefixes combine to form a single syllable. The results of this fusion are highly irregular; they are summarized in the following table.

	Sg. 1.	Sg. 2.	Sg. 3.	Sg. 4.	Du. 1.	Du. 2.
Nav.	dè·š-	dí·-	dò·-	ǯidò·-	dì·(d)-	dò·h-
S. C.	dì·š-	ń-	dò·-	čìdò·-	ǹ·(d)-	dò·h-
Chir.	dò·š-	dó·-	dà-	ǯidà-	dò·(d)-	dà·h-
Mesc.	dò·š-	dǫ́·-	dà-	čìdà-	dǫ̀·(d)-	dà·h-
Jic.	dì·š-	ń-	dà·-	čìdà·-	ǹ·(d)-	dà·h-
Lip.	dò·š-	dǫ́·-	dà·-	čìdà·-	dǫ̀·(d)-	dà·h-
K. A.	dìγìš-	dìγį́·-	dà-	čìdà-	dìγį̀·(d)-	dìγàh-

Nav. verb base nì-...-màs *to roll [something] to a stopping place* (ɬ- class): sg. 1. ǹdè·šmą̀s, sg. 2. ǹdí·ɬmą̀s, sg. 3. nì·dò·ɬmą̀s (nì·- < nì- + yi-, 3rd person object), sg. 4. ǹǯìdò·ɬmą̀s, du. 1. ǹdì·ńą̀s, du. 2. ǹdò·hmą̀s.

S. C. verb base nà·-...-bàh *to go here and there raiding* (zero class): sg. 1. nà·dì·šbàh, sg. 2. nà·ńbàh, sg. 3. nà·dò·bàh, sg. 4. nà·čìdò·bàh, du. 1. nà·ǹ·bàh, du. 2. nà·dò·hbàh.

Chir. verb base yà·-dà·-...-ʔàɬ *to wave a blanket-like object* (zero class): sg. 1. yà·dà·dò·š̀ʔàɬ, sg. 2. yà·dà·dó·ʔàɬ, sg. 3. yà·dàidàʔàɬ, sg. 4. yà·dà·ǯìdàʔàɬ, du. 1. yà·dà·dò·ṫàɬ, du. 2. yà·dà·dà·hʔàɬ.

Mes. verb base ná-di-...-ʔá·ɬ *to pick up a round object* (zero class): sg. 1. nádìdò·šʔá·ɬ, sg. 2. nádìdǫ́·ʔá·ɬ, sg. 3. nâidìdàʔá·ɬ, sg. 4. nášdìdàʔá·ɬ (náš- < ná- + čì-), du. 1. nádìdǫ̀·ṫá·ɬ, du. 2. nádìdà·hʔá·ɬ.

Jic. verb base ná-...-ʔáɬ *to bring a round object back* (zero class): sg. 1. nádì·šʔáɬ, sg. 2. náńʔáɬ, sg. 3. nâidàʔáɬ, sg. 4. náčìdàʔáɬ, du. 1. náǹ·ṫáɬ, du. 2. nádà·hʔáɬ.

Lip. verb base nì-...-kàs *to stop running* (zero class): sg. 1. nìdò·škàs, sg. 2. nìdǫ́·kàs, sg. 3. nìdà·kàs, sg. 4. nìšdà·kàs (niš- < nì- + čì-), du. 1. nìdǫ̀·kàs, du. 2. nìdà·hkàs.

K. A. verb base ...-ʔàɬ *to chew* (zero class): sg. 1. dìγìšʔàɬ, sg. 2. dìγį́·ʔàɬ, sg. 3. yìdàʔàɬ, sg. 4. čìdàʔàɬ, du. 1. dìγį̀·ṫàɬ, du. 2. dìγàhʔàɬ.

In some verb bases with adverbial prefixes of position 9, the future prefix di- unaccountably takes a position before the adverbial. In such instances the adverbial prefix unites with the progressive prefix.

Nav. ni-...-dà·ɬ *one person sits down* (zero class): sg. 1. dínê·šdà·ɬ (instead of *ǹdè·šdà·ɬ), sg. 2. díní·dà·ɬ, sg. 3. dínô·dà·ɬ, sg. 4. dížnô·dà·ɬ (ž, a reduced form of ǯi-; note that dí- appears even before the deictic prefix). In Navaho alone, the di- takes a high tone and the combined adverbial + progressive prefixes, except in the 2nd person, assume a falling tone.

S. C. verb base né-...-ʔį̀·ɬ *to look at* (ɬ- class): sg. 1. dìnê·šʔį̀·ɬ (instead of *ńdì·šʔį̀·ɬ), sg. 2. dìnéńɬʔį̀·ɬ, sg. 3. yìdìnô·ɬʔį̀·ɬ, sg. 4. čìdìnô·ɬʔį̀·ɬ (cf. the Nav. sg. 4. above), du. 1. dìnę̂·ɬʔį̀·ɬ, du. 2. dìnô·ɬʔį̀ɬ.

Chir. verb base Oá-nì-hi-...-há·ɬ *one person lies in wait for someone* (d- class): sg. 1. báǹdìyò·šdá·ɬ (< bi-á-nì-di-hi-ho-š-d-há·ɬ. hi- following di- > yi-), sg. 2. báǹdìyó·dá·ɬ, sg. 3. yáǹdìyàdáɬ.

Mesc. verb base ni-di-hi-...-kàɬ *to fell* (*e.g. a tree*) (ɬ- class): sg. 1. ńdìyò·škàɬ (hi- following di- > yi-), sg. 2. ńdìyǫ́·ɬkàɬ, sg. 3. ńdìyàɬkàɬ.

Jic. verb base ʔá-di-ni-...-yéɬ *to puff oneself up, to gobble* (*as a turkey*) (an irregular l- class): sg. 1. ʔádìdìnì·šyéɬ, sg. 2. ʔádìdìńyéɬ, sg. 3. ʔádìdìnà·yéɬ, sg. 4. ʔášdìdìnà·yéɬ (ʔáš- < ʔá- + čì-), du. 1. ʔádìdìǹ·yéɬ, du. 2. ʔádìdìnà·hyéɬ.

Lip. verb base zi-...-yáiɬ *to kill one person* (ɬ- class): sg. 1. dìzò·šxáiɬ (-xáiɬ < -yáiɬ by assimilation to preceding spirant), sg. 2. dìzǫ́·ɬxáiɬ, sg. 3. yìdìzàɬxáiɬ, sg. 4. čìdìzàɬxaiɬ, du. 1. dìzǫ̀·ɬgáiɬ (-gáiɬ by analogy with first person duals of the zero class), du. 2. dìzà·ɬxáiɬ.

I have no examples of this irregular future paradigm in Kiowa Apache.

11. The iterative paradigm has a prefix ná- (Jic. ⁿdá- or ná-, K. A. dá- or ná·) in position 5, zero morphemes in positions 10 and 11, and employs subject pronoun set 1.

Nav. verb base ƙí-...-dǫ̀· *to straighten* (ɬ- class): sg. 1. ƙínášdǫ̀·, sg. 2. ƙínáńɬdǫ̀· (a high toned n in the second person is required if the immediately preceding prefix has the high tone), sg. 3. ƙínâiɬdǫ̀· (nâiɬ- < ná-yi-ɬ), sg. 4. ƙínáǯɬdǫ̀·, du. 1. ƙínâildǫ̀·, du. 2. ƙínáɬdǫ̀·.

S. C. verb base di-...-bàh *to start off to war* (zero class): sg. 1. nádìšbàh, sg. 2. náńbàh, sg. 3. nádìbàh, sg. 4. nášdìbàh, du. 1. náǹ·bàh, du. 2. nádòhbàh.

Chir. verb base Oé-ʔi-di-...-ʔà· *to sing about someone* (ɬ- class): sg. 1. béná?diš?à·, sg. 2. béná?ńɬ?à·, sg. 3. yéná?diɬ?à·, sg. 4. béná?šdiɬ?ą̀·, du. 1. béná?ǹ·ɬà·, du. 2. bèná?dàɬ?à·.

Mesc. verb base ni-...-ⁿdé *to eat* (ɬ- class): sg. 1. náǹšⁿdé, sg. 2. náńɬⁿdé, sg. 3. náyìǹɬⁿdé, sg. 4. náčìǹɬⁿdé, du. 1. náǹ·ɬⁿdé, du. 2. nánàɬⁿdé.

Jic. verb base nì-...-ʔáih *to put a round object down* (zero class): sg. 1. ǹⁿdáš?áih, sg. 2. ǹⁿdáń?áih, sg. 3. ǹⁿdâi?áih, sg. 4. ǹⁿdáčì?áih, du. 1. ǹⁿdą̀·ɬáih, du. 2. ǹⁿdáh?áih.

Lip. verb base nì-...-ʔáh *to put a round object down* (zero class): sg. 1. nìnáš?áh, sg. 2. ǹnání?áh, sg. 3. ǹnâi?áh, sg. 4. ǹnáčì?áh du. 1. ǹną̀·ɬáh, du. 2. ǹnáh?áh.

K. A. verb base ...-là· *to become* (zero class but the iterative requires a d- classifier): sg. 1. dášlà·, sg. 2. nádílà·, sg. 3. dálà·, sg. 4. dáčìlà·, du. 1. nâ·là·, du. 2. dáhla·.

The customary (or usitative) paradigm usually employs the prefix complex characteristic of the imperfective paradigm and the stem alternant characteristic of the iterative paradigm. Compare, for example, the regular imperfective, iterative, and customary paradigms of the Navaho verb base di-...-ʔà·h (imperfective stem), -ʔá·h (iterative and customary stem) *to begin to carry a round object* (zero class):

		Imperfective	Iterative	Customary
Sg.	1	diš?à·h	nádiš?á·h	diš?á·h
	2	dí?à·h	nádí?á·h	dí?á·h
	3	yìdì?à·h	nâidì?á·h	yìdì?á·h
	4	ǯìdì?à·h	náždì?á·h	ǯìdì?á·h
Du.	1	dì·ɬà·h	nádì·tá·h	dì·ɬá·h
	2	dòh?à·h	nádòh?á·h	dòh?á·h

When the verb base takes the h- imperfective, as in the case of the Navaho base nà-...-ʔá (imperfective stem), -ʔà·h (iterative and customary stem) *to carry a round object here and there* (zero class), the customary also includes a hi- (Nav. yi-) prefix:

		Imperfective	Iterative	Customary
Sg.	1	nà·š?á	ǹnáš?à·h	nà·š?à·h
	2	nàǹ?á	ǹnáń?à·h	nàǹ?à·h
	3	nài?á	ǹnái?à·h	nài?à·h
	4	nàǯì?á	ǹnáǯì?à·h	nàǯì?à·h
Du.	1	nàiɬá	ǹnâiɬà·h	nàiɬà·h
	2	nà·h?á	ǹnáh?à·h	nà·h?à·h

But when the verb base has the n- imperfective, the customary prefix complex

differs in that the ni- of the imperfective paradigm is absent. Thus in the Navaho verb base nì-...-ʔà·h (imperfective stem), -ʔá·h (iterative and customary stem) *to put a round object down* (zero class) we find the following paradigms:

	Imperfective	Iterative	Customary
Sg. 1	ǹǹšʔà·h	ǹnášʔá·h	ǹšʔá·h
2	ǹníʔà·h	ǹnáńʔá·h	nǐ·ʔá·h
3	ǹyíʔà·h	ǹnâiʔá·h	ǹyìʔá·h
4	ǹǯíʔà·h	ǹnáǯìʔá·h	ǹǯìʔá·h
Du. 1	ǹnì·ɬà·h	ǹnâitá·h	nì·ɬá·h
2	ǹnòhʔà·h	ǹnáhʔá·h	nòhʔá·h

It is clear of course that in the case of verb bases conjugated in the regular or h-imperfective and possessing identical imperfective and interative stems, there will be no structural differences whatsoever between the imperfective and customary paradigms.

12. The optative paradigm is marked by a prefix having the form γo- in Navaho, ho- in San Carlos, Chiricahua, Mescalero, Jicarilla, and Lipan, and γi- in Kiowa Apache. The tone of this prefix behaves irregularly; no general rule can be given which applies to all the Apachean languages. The optative paradigm employs subject pronoun set 1 and has zero morphemes in positions 5 and 10.

Nav. verb base ...-bé·ž *to boil* [*something*] (ɬ- class): sg. 1. γóšbé·ž, sg. 2. γó·ɬbé·ž, sg. 3. yóɬbé·ž (< yi-, 3rd person object, + γó- + ɬ- + -bé·ž. Cf. the 3rd person intr. γóbé·ž), sg. 4. ǯóɬbé·ž, du. 1. γò·lbé·ž, du. 2. γò·ɬbé·ž. Note that γo- assumes the high tone in the first, third, and fourth persons and the low tone in the second person dual. The high tone of the second person singular is due to the subject pronoun as is the low tone of the first person dual.

Nav. verb base dì-...-bá·h *to start off to war* (zero class): sg. 1. dóšbá·h, sg. 2. dó·bá·h, sg. 3. dóbá·h, sg. 4. ǯìdóbá·h, du. 1. dò·bá·h, du. 2. dò·hbá·h. Here γo- combines with the preceding prefix di- but retains the high tones in the first, third, and fourth persons.

Nav. verb base yi-...-ʔà? *to undertake a ceremony* (ɬ- class): sg. 1. γò·šʔà? (< yi-γo-š-ɬ-ʔà?), sg. 2. γǒ·ɬʔà? (< yi-γo-'-ɬ-ʔà?), sg. 3. yìyò·lʔà? (< yi-yi-γo-ɬ-ʔà?. It is not clear why yi- + γo- here becomes yò·- where heretofore it has been γò·-), sg. 4. ǯò·ɬʔà? (< ǯi-yi-γo-ɬ-ʔà?), du. 1. γò·lʔà? (< yi-γo-ì·d-ɬ-ʔà?), du. 2. γò·ɬʔà? (< yi-γo-oh-ɬ-ʔà?). Note the low tones in the first, third, and fourth persons.

Nav. verb base nà-...-bá·h *to raid here and there* (zero class): sg. 1. nò·šbá·h, sg. 2. nǒ·bá·h, sg. 3. nò·bá·h, sg. 4. ǹǯóbá·h, du. 1. nò·bá·h, du. 2. nò·hbá·h.

Nav. verb base ná-...-ʔàh *to butcher* (ɬ- class): sg. 1. nó·šʔàh, sg. 2. nó·ɬʔàh, sg. 3. ńyóɬʔàh, sg. 4. ńǯóɬʔàh, du. 1. nô·lʔàh, du. 2. nô·ɬʔàh.

S. C. verb base ...-bé·ž *to boil* [*something*] (ɬ- class): sg. 1. hóšbé·ž, sg. 2. hǫ́·bé·ž, sg. 3. yó·ɬbé·ž, sg. 4. čó·ɬbé·ž, du. 1. hǫ̀·lbé·ž, du. 2. hò·ɬbé·ž.

S. C. verb base di-...-báh *to start off to war* (zero class): sg. 1. dó·šbáh, sg. 2. dǫ́·báh, sg. 3. dó·báh, sg. 4. čìdó·báh, du. 1. dǫ̀·báh, du. 2. dò·hbáh.

S. C. verb base hi-...-bàʔ *to make gray* (ɬ- class): sg. 1. hò·šbàʔ, sg. 2. hǫ̀·ɬbàʔ, sg. 3. yò·ɬbàʔ, sg. 4. čò·ɬbàʔ, du. 1. hǫ̀·lbàʔ, du. 2. hò·ɬbàʔ.

S. C. verb base nà·-...-bà· *to raid here and there* (zero class): sg. 1. nò·šbà·, sg. 2. nǫ̀·bà·, sg. 3. nò·bà·, sg. 4. nà·čó·bà·, du. 1. nà·hǫ̀·bà·, du. 2. nò·hbà·.

S. C. verb base ná-...-ʔàh *to butcher* (ɬ- class): sg. 1. nô·šʔàh, sg. 2. nǫ́·ɬʔàh, sg. 3. náyó·lʔàh, sg. 4. náčó·ɬʔàh, du. 1. nǫ̂·lʔàh, du. 2. nô·ɬʔàh.

Chir. verb base ...-ʔà·ɬ *to chew* (zero class): sg. 1. hóšʔà·ɬ, sg. 2. hó·ʔà·ɬ, sg. 3. yóʔà·ɬ, sg. 4. ǯóʔà·ɬ, du. 1. hò·tà·ɬ, du. 2. hà·hʔà·ɬ.

Chir. verb base di-...-ʔį· *to begin to carry an unknown object* (zero class): sg. 1. dóšʔį·, sg. 2. dó·ʔį·, sg. 3. yìdóʔį·, sg. 4. ǯìdóʔį·, du. 1. dò·tį·, du. 2. dà·hʔį·.

Chir. verb base ná-di-...-ʔį· *to pick up an*

object of unknown classification (zero class): sg. 1. nádò·šʔį́, sg. 2. nádó·ʔį́, sg. 3. nâidò·ʔį́, sg. 4. nášdò·ʔį́, du. 1. nádò·ṭį́, du. 2. nádà·hʔį́.

Chir. verb base nà·-...-bà· *to raid here and there* (zero class): sg. 1. nò·šbà·, sg. 2. nǒ·bà·, sg. 3. nò·bà·, sg. 4. nà·ʒóbà·, du. 1. nò·bà·, du. 2. nà·hbà·.

Chir. verb base ná-...-bą́·s *to give* [*it*] *a turn* (ɬ- class): sg. 1. nô·šbą́·s, sg. 2. nó·ɬbą́·s, sg. 3. náyóɬbą́·s, sg. 4. náʒóɬbą́·s, du. 1. nô·ɬbą́·s, du. 2. nâ·ɬbą́·s.

Mesc. verb base ...-bé·ʒ *to boil* [*something*] (ɬ- class): sg. 1. hóšbé·ʒ, sg. 2. hǫ́·ɬbé·ʒ, sg. 3. yóɬbé·ʒ, sg. 4. čóɬbé·ʒ, du. 1. hǫ̀·ɬbé·ʒ, du. 2. hà·ɬbé·ʒ.

Mesc. verb base di-...-bá *to start off to war* (zero class): sg. 1. dóšbá, sg. 2. dǫ́·bá, sg. 3. dóbá, sg. 4. čìdóbá, du. 1. dǫ̀·bá, du. 2. dà·hbá.

Mesc. verb base ná-di-...-ʔà· *to pick up a round object* (zero class): sg. 1. nádò·šʔà·, sg. 2. nádǫ́·ʔà·, sg. 3. nâidò·ʔà·, sg. 4. nášdò·ʔà·, du. 1. nádǫ̀·ṭà·, du. 2. nádà·hʔà·.

Mesc. verb base nà·-...-bà· *to raid here and there* (zero class): sg. 1. nò·šbà·, sg. 2. nǫ̌·bà·, sg. 3. nò·bà·, sg. 4. nà·čóbà·, du. 1. nǫ̀·bà·, du. 2. nà·hbà·.

Mesc. verb base ní-...-ʔàh *to butcher* (*an animal*) (ɬ- class): sg. 1. nô·šʔàh, sg. 2. nǫ́·ɬʔàh, sg. 3. nyóɬʔàh, sg. 4. ńčóɬʔàh, du. 1. nǫ̀·ɬṭàh, du. 2. nâ·ɬʔàh.

Jic. verb base ...-béš *to boil* [*something*] (ɬ- class): sg. 1. hóšbéš, sg. 2. hǫ́·ɬbéš, sg. 3. yóɬbéš, sg. 4. čóɬbéš, du. 1. hǫ̀·ɬbéš, du. 2. hà·ɬbéš.

Jic. verb base di-...-báh *to start off to war* (zero class): sg. 1. dóšbáh, sg. 2. dǫ́·báh, sg. 3. dóbáh, sg. 4. čìdóbáh, du. 1. dǫ̀·báh, du. 2. dà·hbáh.

Jic. verb base hi-...-báh *to make gray* (ɬ- class): sg. 1. hò·šbáh, sg. 2. hǫ́·ɬbáh, sg. 3. yò·ɬbáh, sg. 4. čò·ɬbáh, du. 1. hǫ̀·ɬbáh, du. 2. hà·ɬbáh.

Jic. verb base nà·-...-bé·h *to bathe* (zero class): sg. 1. nà·šbé·h, sg. 2. nǫ̀·bé·h, sg. 3. nà·béh, sg. 4. nà·čóbé·h, du. 1. nǫ̀·bé·h, du. 2. nà·hbé·h. Note that the o- of the optative prefix is absorbed to the vowel of the adverbial prefix. See also the following example.

Jic. verb base ná-...-báɬ *to swing around* (zero class): sg. 1. nâ·šbáɬ, sg. 2. nǫ́·báɬ, sg. 3. nâ·báɬ, sg. 4. náčóbáɬ, du. 1. nǫ̀·ɬbáɬ, du. 2. ná·ɬbáɬ.

Lip. verb base ...-bíš *to boil* [*something*] (ɬ- class): sg. 1. hóšbíš, sg. 2. hǫ́·ɬbíš, sg. 3. yóɬbíš, sg. 4. čóɬbíš, du. 1. hǫ̀·ɬbíš, du. 2. hà·ɬbíš.

Lip. verb base ha-ʔi-di-...-ʔà· *to sing* (zero class): sg. 1. hà·ʔdóšʔà·, sg. 2. hàdǫ́·ʔà·, sg. 3. hà·ʔdóʔà·, sg. 4. hà·ʔšdóʔà·, du. 1. hà·ʔdǫ̀·ṭà·, du. 2. hà·ʔdà·hʔà·.

Lip. verb base dà-di-...-cá *to put something in one's mouth* (ɬ- class): sg. 1. dàdò·šcá, sg. 2. dàdǫ́·ɬcá, sg. 3. dàidò·ɬcá, sg. 4. dàšdò·ɬcá, du. 1. dàdǫ̀·ɬcá, du. 2. dàdà·ɬcá.

Lip. verb base nà·-...-bà· *to raid here and there* (zero class): sg. 1. nò·šbà·, sg. 2. nǫ̌·bà·, sg. 3. nò·bà·, sg. 4. nà·čóbà·, du. 1. nǫ̀·bà·, du. 2. nà·hbà·.

Lip. verb base yá-...-kìh *to speak* (ɬ- class): sg. 1. yô·škìh, sg. 2. yǫ́·ɬkìh, sg. 3. yô·ɬkìh, sg. 4. yáčóɬkìh, du. 1. yǫ̀·ɬkìh, du. 2. yâ·ɬkìh.

K. A. verb base ...-bà·ɬ *to lick* (ɬ- class): sg. 1. γî·šbà·ɬ, sg. 2. γį́·ɬbà·ɬ, sg. 3. yìγî·ɬbà·ɬ, sg. 4. čìγî·ɬbà·ɬ, du. 1. γį̀·ɬbà·ɬ, du. 2. γà·ɬbàɬ.

In Kiowa Apache it appears that the optative prefix does not fuse with either a preceding adverbial or paradigmatic prefix. Thus, for example, for the verb base di-...-bá· *to start off to war* (zero class), we have the following optative paradigm: sg. 1. dìγî·šbá·, sg. 2. dìγį́·bá·, sg. 3. dìγî·bá·, sg. 4. čìdìγî·bá·, du. 1. dìγį̀·bá·, du. 2. dìγà·bá·.

THE PHONEMES OF NORTH CAROLINA CHEROKEE

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0. Introduction
1. Contours and junctures
2. Features determined by contours and junctures
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4. Variants of individuals phonemes
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0. The following is a tentative presentation of the phonemes of North Carolina Cherokee. It is based primarily on the speech of Will French and to a lesser degree on that of Molly Sequoia. Both are from the Great Smokies in western North Carolina. There were some differences between the dialect of the two informants, but none such as to make it impossible to construct one phonemic system that would be adequate for both. Mr. French had spent many years among the Oklahoma Cherokee, but the material used for this analysis contained only his North Carolina dialect forms, in so far as this could be determined directly and indirectly.[1] In view of the considerable dialectal complexity within North Carolina Cherokee the present report is offered only as a tenative analysis which may be used in the course of more extensive studies of Cherokee phonemics.

[1] The material from Mr. French was obtained by Harris (in 1941, when Mr. French was about 75 years old), and the material from Mrs. Sequoia was obtained primarily by Bender (in 1945, when she was 67 years old). We are indebted to our colleague John G. Witthoft for valuable assistance in working with Mrs. Sequoia, and to the American Philosophical Society, and the Faculty Research Committee of the University of Pennsylvania. Bender's work was carried out while on a grant of the American Council of Learned Societies.

1. Contours and junctures. The most striking feature of Cherokee is the rhythm and tone sequence of speech. At first blush it might seem that Cherokee is a tone language in the usual sense of the term, since the phonetic differences in tone from vowel to vowel seems to an American hearer to be considerable. It soon becomes apparent, however, that although there are no simple regularities covering the occurrence of particular tones, nevertheless some dependence is observable. For the most part, the sequence of tones in an utterance can be described as one or more occurrences of the following sequence: relative low tones, followed by one or no middle tones, followed by one (or two) high tones: amá *water* (a low, á high); dayÁ *he got them* (a low, Á high); ayehá *he carries now* (a low, e mid, á high); wideziyÁ *I went and got them* (i low, e mid, i mid, Á high); yʌzínogáyigí *I may bring it* (ʌ low, í high, o low, á high, i mid, í high); aginehgʌsá *I did move it* (a i e low, ʌ mid, á high)[2]; yʌgóiyuhʌgáyigí *I might believe;* dezigádla *I cut them* (past); nagwóhnilói hzílugí *I knocked before you came;* dayósdanelhdaní edlhwé oginʌdíyu *he and I will try to be silent.*

1.1. The rising contour. We may therefore speak of a rising contour which is repeated throughout each utterance. The only feature which is not automatic and which therefore has to be marked is the point at which the contour ends. This will be indicated by an accent mark, which will be placed on the high-tone vowel. The vowels preceding it, up to the next accented vowel, will be lower: the vowel

[2] The use of the accent mark to indicate the tone sequence will be explained below.

immediately preceding the accented one will often be middle-tone, while the ones preceding it will be low-tone: alé *and* (a low, é high); selú *corn* (e low, ú high); anená *they've gone* (a low, e mid, á high); dʌnaí *they're coming* (ʌ low, a mid, í high); alasgalhdí *ball* (first and second a low, third a mid, í high); udohiyú *yes* (u low, o low, i low, ú high).

When an utterance, or part of an utterance (e.g. what is set up morphologically as a word), contains more than one of these rising stretches, the last (high) vowel of each stretch may be accented: agiyohúselʌhnoná *I lost it before I found it* (a i o low, ú high, e low, ʌ o mid, á high); gadawósgʌgí *I was bathing* (first and second a's low, ó high, ʌ low, í high); yinugagóhiyuhʌgá *he may believe it* (i u a low, o high, i u low, ʌ mid, á high); agwelísinísʌgí *he was leading me* (a e low, i high, i low, i high, ʌ low, í high).

This indication suffices to mark the tones of the few three-syllable utterances which have two high vowels: gálugí *he comes* (á high, u low, í high); ásgiyí *December* (á high, i low, í high); dáhdinesí *he's going to take it* (á high, i low, e mid, i high); hdísdigí *you're going to eat it* (i high, i low, í high).

1.2. The # juncture. The high end-point of each rising contour is further found to be dependent in part upon another feature of the utterance, namely its end and the onset of silence or of a relatively long break. Many utterances end on a high vowel ending a contour: hgilagwú zinʌlí *I sent him just now* (i a low, ú high; i low, ʌ mid, í high); hdlahnó zalagí yigeá *I'm not living at Cherokee anymore.* (a low, ó high; a a low, í high; i low, e mid, á high); esgá dagalohí *he is coming this way now* (e low, á high, a a low, o mid, í high).

And if we break an utterance up into such of its constituent parts as will sometimes occur as complete utterances, we will find that very many of these parts also end on a high vowel ending a contour: zinʌlí *I sent him;* hgilagwú *now;* hdlahnó *not;* esgá *here, this way;* dagalohí *he is coming.*

Since a term or mark (#) for silence or long break is necessary in the description of Cherokee phonemes and their distribution, we ask if the rising contour can be considered automatic in respect to phonemic #. In part, this can be done. We can say that the vowel immediately preceding # is the high end point of a contour. The only cases in which this will not be true are cases where the penult is high and the final vowel is middle-tone. In such cases we accent the penult. We obtain the following spellings: ayʌ *I* (a low, high); ziloi *I pass* (first i low, o mid, last i high); ayʌÁgi *Yankee* (a low, ʌ mid, Á high, i mid).

The phonemic #, usually indicated by space, thus has as its phonetic value not only silence or potential long break in speech but also the ending of a contour on the vowel preceding it. This contour would continue up to the preceding accent or #. If there is but one vowel between # and the preceding accent, that vowel has middle tone.[3]

We have thus avoided the necessity to indicate contour end on pre-vowels. This does not eliminate contour end phonemically, because there remain contours which end not on final vowels (when the final contour does not reach backward to the preceding #). These other contour ends must still be indicated by phonemic accent: yʌwiyái *Indian* (ʌ i low, á high, i mid); gayóhli *few* (a low, ó high, i low); nanighdahéi *they already knew it* (a i a low, é high, i mid); hnighdahésgo *did you know it already* (i a low, é high, i mid).

1.3. The - juncture. In many cases the occurrence of a contour end before the final vowel results from the addition of a morpheme over which the contour does not

[3] We may say that the whole contour stretches over only that one vowel, and that contours of one-vowel length consist of just a middle tone.

extend. This happens for some suffix morphemes and not for others. Thus when we compare agwohiyú *I believe* with agwohiyuhá *I believe* we see that the contour stretched over whatever morphemes are present in the utterance, ending at ‡. But when we compare digwénasʌ ‡ *my home* with digwénasʌi ‡ *to my home* we see that the contour did not stretch up to ‡ independently of the morphemes involved. It extended over the digwénasʌ and remained that way even when i is pronounced after it. We could of course say that the ‡ after digwénasʌ ‡ remains, so that the contour did not stretch over when i was added, just as the contour of hgilagwú *now* does not stretch over when zinʌli *I sent him* is pronounced after it: hgilagwu and zinʌli when by themselves, and hgilagwu ‡ zinʌli *I sent him just now.* However, we cannot say that ‡ occurs between digwénasʌ and i, because when the two are pronounced in succession no one stops between them (in digwénasʌi) whereas a speaker might make a distinct break between the two parts of hgilagwu ‡ zinʌli. Instead of using the ‡ juncture in digwénasʌi, we may therefore have to introduce a new juncture - which has the contour-determining, but not silence and long-break, values of ‡. This new juncture would simply be a part of the morphemes with which it always occurs. That is, the morphene for *to* would be not i but -i. Other morphemes beginning with - are: yigi *perhaps, maybe;* sgo *is it that.*

We can thus compare: digwénasʌ *my home,* digwénasʌ́-i *to my home;* hiyadáginʌda *you knocked him down,* hiyadáginʌdásgo *did you knock him down;* hwigi *you went and got,* hwigísgo *did you go and get;* hinohilida *you have been hunting,* hinohilidásgo *have you been hunting?;* ahnile yigea *I may live here,* ahnilé yigeá yigi *I may live here;* yúniwahi *they may buy,* yúniwahíyigi *they may buy.*

As here defined, the juncture has morphophonemic status, since it does not occur after every contour-ending (accented) vowel which does not have ‡ after it. E.g. we would not write digwe-nasʌ for digwénasʌ. Further morphological analysis, however, may make it possible to set up the - juncture as part of all post-accent morphemes.

2. Features determined by contours and junctures. The occurrence of many features of Cherokee speech may be predicted from the position of the contour end-points. This includes features of the whole stretch of speech, types of contact between phonemes, and specific variants of particular phonemes.

2.1. Rhythm and contact. Phonemes at the beginning and at the end of each contour are pronounced with phonetically loose contact, and those in the middle part of the contour stretch are pronounced with relatively close contact. As a result the impression obtained is that the beginning and end of a contour stretch is spoken slowly and the middle portion spoken fast: dehigwenugi *he pinched me* (-higwe- is spoken fast and de- and nugi slow); agiyágohna *I'm thru eating* (a-, -ya- and -hna are spoken slow, and -gi- and -go- fast).

In the positions for loose contact vowels are relatively longer, or glottal stop separates the vowel from the following consonant (with slight pre-aspiration instead of glottal-stop if the following consonant is s). In the same position double consonants are pronounced with some separation. Whereas we have voiceless n as a phonetically single sound elsewhere, we have the sequence hn in the loose contact positions. And whereas the cluster dl is elsewhere used to represent a single sound, perhaps indistinguishable from simple l, it represents in loose contact positions a clear dl with the d held long or short.[4]

[4] It is not certain that the cluster dl is phonemically distinct from l. There is considerable indication that dl is pronounced l in close contact

The loose contact positions are, in detail: the first consonant (C) and/or vowel (V) after #, and the vowel and consonant preceding the accented vowel, and the contact between an accented vowel and a consonant following it. Loose contact is particularly apparent in the first and last consonant and vowel of #CVCV# and #CVCVCV# (each with single rising contour). The following examples are phonetically transcribed: zi·nÁsʌgi *I asked him* and gazisdagiha *I bite now;* a·ktaha *he knows* and dodagwenu·gi *he pinched him;* zi?yeha *I carry now* and dazinéze?si *I'm going to carry;* iyúhsdi *like,* ohsíhno *good;* aginohna *I'm through putting down;* dazigadlúsi *I'll cut* (*cloth*), and dodazígalsi *I'll cut.*

2.2. Whispering and dropping of vowels. Vowels in close contact position are often whispered or completely dropped. This applies primarily to vowels in the middle portion of a contour stretch, but less frequently also to vowels under the accent. When a vowel is completely dropped the consonants on one or both sides of it are usually completely unvoiced (they are usually only partially voiced otherwise), and often the first of the consonants is released or (if both consonants are stops or affricates) aspirated. There is free variation within the limits indicated here, and in many cases one may hear a form pronounced with full vowel, whispered vowel, or dropped vowel, depending on the rapidity of speech and on less observable factors. The following examples are phonetically transcribed: ak'taha *he knows;* anig(a)tahéi *they knew;* yin(i)gazigowahta *I may see;* danałsgísgʌgi and danalisgísgʌgi *they were dancing;* andisgói and anadisgói *they said;* uyeldi *it means* and uniyélʌdi *they mean.*

It is always possible to recognize the occurrence of a dropped vowel, not only by the fact that it usually varies with a whispered or full vowel, but also by its effect on the consonants neighboring it. Even if these consonants are not completely unvoided, i.e. do not have special variants in the neighborhood of a dropped vowel, the dropping of the vowel usually brings together into a cluster two consonants which do not otherwise occur as a cluster (since very few phonemic consonant clusters occur in Cherokee). Therefore the mere occurrence of a cluster like ld, even though the variants of each be those which occur elsewhere too, suffices for a phonemicization as l + dropped vowel + d: aduĺdiha *he begged just now,* uduĺdʌgi and uduládʌgi *he begged before* (Í indicates high-tone syllabic l).

2.3. Final vowels. Vowels preceding # (but not -) are often whispered or dropped. This occurs even when there is no phonetic break whatsoever across the # juncture. The tone of the dropped vowel occurs in general on the preceding vowel or consonant. When the dropped final vowel was merely the last point of a long contour, that contour is simply pronounced over the slightly shortened stretch (shortened by the loss of the vowel), with the preceding vowel or consonant becoming the high end point of the contour. When the dropped vowel had constituted a contour of its own, the tone of the preceding vowel or consonant is modified by a trace of the contour which was otherwise pronounced with that vowel: digwénasʌ *to my home* with falling tone on the final ʌ, as a variant of digwénasʌ-i (ʌ with high tone, i with middle tone); this differs phonemically from digwénasʌ *my*

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positions, and in certain of the loose contact positions dl varies freely with l. The bar to considering phonetic dl as merely the loose contact variant of phonemic l is the fact that l also occurs in most loose contact positions. Further data may show that even in morphemes containing (in our material) only l (and never dl) in loose contact positions, the l can vary with dl. In that case the present dl will be phonemicized as l. Phonetic: higadla *cut*(*cloth*)*!* and dazígalsi *I'll cut* (*cloth*); de·zisgwadla *I break* (*stick*) and dazísgwalsi *I'll break* (*stick*); sogwili *horse*; hilágoiyu *when*; ale *and.*

home with high tone on the final ʌ. The following examples are phonetically transcribed: zudalenáhn(ʌ) *since;* nugád(a) *all;* adél(a) uwáhsa *only money;* yon(a) *bear;* ahw(i) *deer.*

In the case of all whispered and dropped vowels, both medial and final, it is possible to retain some phonemic indication of the occurrence of the vowel, since it has been seen that one can recognize from the phonetic form the position of the whispered or dropped vowel. It is not however always possible to state, on the basis of the phonetic form, which vowel was dropped; in such cases, therefore, we cannot say that the phonemic form includes the dropped vowel. We can only say that it includes an indication of some vowel . . . any vowel. The mark for this can be h, since the phoneme h never occurs in the position of a whispered or dropped vowel, and since the effect of h on neighboring consonants is about the same as the effect of whispered or dropped vowels on neighboring consonants.

We would then write úsgwanighdi for phonetic usgwanik'ti *great things* (with whispered or dropped vowel before the di), and andisgói as a variant of anadisgói *they said*, both being phonemic forms. These are, of course, morphophonemically related forms rather than variations within a phoneme, since h is a variant of any one of six vowel phonemes: danalhsgísgʌgi and danalisgísgʌgi *they were dancing;* uyelhdi *it means* and uniyélʌdi *they mean;* dagáyhlesi and dagáyolesi *I'm going to hunt you;* agwalhsdádlhnidi and agwalhsdádlunidi *I am about to sit.*

3. The voicless consonants. Phonetically, Cherokee has voiceless n. y, w, l, z (affricate ts), tl, t, k as well as voiced n, y, w, l, z (affricate dz), dl, d, g. It is possible to consider each voiceless consonant as being phonemically h plus the homorganic voiced counterpart, since h consonant does not otherwise occur. There is support for this in the positional variation within phonemes, since, for example, voiceless n occurs in close contact positions while hn occurs in loose contact positions. Further support comes from the fact that s, the only other phoneme which, like h, has no homorganic voiced counterpart, occurs as first member of consonant clusters: sd, sg (zinʌ́sga *I put it down now* asdasdi *spinning-wheel*). Finally, there is considerable morphophonemic convenience in this phonemicization. For there is a morphemic h (non-first person) which when infixed between vowels or before s appears as h, but when infixed before other consonants often appears in the devoicing of these consonants. If we write, voiceless g as a single phoneme k, we have to say that the morphemes dezíganega *I tie string* when associated with this morphemic h have the phonemic form dakenega *he ties string* (while the h has phonemic form zero). If however we write voiceless g as hg, we merely say that in dahganega we have g plus morphemic h.

ehinúuga	*bring it!*
agwʌhesdi	*I'll be*
galagohsga	*he scrapes out* and zilagosga *I scrape out*
dadlagohsga	*he scratches himself* and degadlagosga *I scratch myself*
dahzali	*he'll kill you*
uhnʌʌ́ga	*he did put it down*
ahyeha	*he comes now*
hwiyʌ	*go and get it!*
dʌhli	*he'll kill him*

4. Variants of individual phonemes.

i: high front vowel; appreciably lower (toward i) in final position and when almost whispered. Between i and a following vowel a y glide often appears. When the following vowel is a contour end point the y glide is long and has the effect of an ambisyllabic connection between the i and its following vowel: hiniyʌ́ *Catch it!* with ambisyllabic y glide between the i and ʌ; iyúsdi *like;* igohiyuha *we(including you) believe;* unihgahói *they had;* anihdonánʌgi *they were standing.*

e and o: mid front and back vowels respectively, with somewhat lower variants toward ɛ and ɔ) finally and in close contact positions and before h. Somewhat higher variants sometimes occur before g. Thus: esdinúuga *you 2 bring the stick here;* zinehgÁgi *I put it down;* eginʌli *all of us (and you) have been sent by anyone (or more);* danhdísge *they used;* oginʌli *all of us (and more) have been sent by anyone (or more);* analenisgói *they began;* hiáhno *now;* ohni *after.*

a: low vowel, neither front nor back, with a rather back variant finally and, to a lesser degree, in close contact positions. In Mrs. Sequoia's speech a variant approaching ɔ occurs before gwu: phonetic nɔgwo *now* for phonemic nagwu. Examples are: ayósdana *it's been destroyed by someone;* ama *water;* agwenʌsdigi *I'll go;* anadihdasgoi *they drink;* hihgʌna *move it.*

ʌ: Low back vowel (somewhat more centered than the vowel of English cut), with a more centered variant (approximating a pure centered vowel) occurring chiefly before d, n, l. Before g a clearly low back variant occurs. Before n, g the ʌ is often nasalized. Thus: dʌnihnohli *they'll bring cloth;* anihdonánʌgi *they were standing;* eginʌli *all of us (and you) have been sent by anyone (and more);* anigehiyʌ *woman;* nʌdÁnadʌneli *they were going to do.*

u: high back rounded vowel. Between u and following vowel a glide w occurs. In Mrs. Sequoia's speech u after gw was lowered: phonetic nɔgwo *now* for phonemic nagwu. Thus: uyósdana *it's been destroyed by him;* ezinuga *you (3 or more) bring the stick here;* zunanelhdi *they used to play;* phonetic: uwuha *he's got something in the water;* zuwedasdíyi *road.*

h: light open breathing between vowels, with a closer spirant variant before consonants (more exactly, in #—C and V—C positions, where — indicates the place of the h). hC in close contact positions represents voiceless C. h in C-C position represents a whispered or dropped vowel and indicates usually unvoiced variants of the two neighboring C. h varies freely with zero between silence and vowel (in #-V). Thus: wuhdígesʌgi *he was supposed to send it;* hdini *you are bringing;* hgilagwu *soon;* anighdahéi *they knew;* anhdisgói *they said;* dahgahega *he ties string;* phonetic: (h)adéla *money;* (h)ale *and;* (h)igizi *our mother.*

s: alveolar s sibilant, often pronounced toward š, especially before vowels. When it precedes a contour-ending vowel (accented or pre-juncture) there is often a slight pre-aspiration varying with length of the preceding vowel: esga *here;* dagÁyolesi *I'm going to hunt you;* selu *corn;* phonetic: šaša *geese;* dadeši *we are all going;* šʌnkta *apple.*

z: weakly voiced alveolar affricate dz, sometimes dž: zinehgÁgi *I put it down;* zalagi *Cherokee;* dazinezi *I'll say;* phonetic: žúkanohna *black oak;* ždedóha *place where you two are.*

d: weakly voiced alveolar stop: dadesi *we are all going;* adéla *money;* gazisdagiha *I bite now;* ahdʌdÁhʌsga *he's asking now;* anadisgoi they said.

g: weakly voiced palatal stop: danalisgísgʌgi *they were dancing;* nugáda *all;* galagohsga *he scrapes out;* gohuúsdi *something;* dégasohgÁgi *ford.*

l: voiced lateral: danalisgísgʌgi *they were dancing;* uniyélʌdi *they mean;* adéla *money;* dahzali *he'll kill you;* analenisgói *they began.*

w: voiced bilabial continuant: agwʌhesdi *I'll be;* awinuúza *young man;* ahwi *deer;* yʌwi *person;* wahga *beef;* wuhdígesgi *he was supposed to send it;* agiwahsa *I brought.*

y: voiced alveolar y continuant: uniyélʌdi *they mean;* hwiyʌ *go and get it;* iyúsdi *like;* igohiyuha *we (including you) believe;* yona *bear.*

n: voiced nasal post-dental continuant: nugáda *all;* yona *bear;* ehinúgi *bring it;* anihdonánʌgi *they were standing.*

The preceding seven phonemes (z to n inclusive) have voiceless variants when they occur next to h in close contact positions.

m: very rare voiced bilabial nasal continuant. It occurs only in a few morphemes, mostly obvious foreign borrowings: ama *water;* gimídhdi *quarter;* meli *Mary;* mahdi *Marty.*

5. List of phonemes. The phonemes of North Carolina Cherokee may be set up as follows, each symbol having the values indicated in the preceding sections: /h s z d g l w y n m i e a ʌ o u ' - # /.

5.1. Many pairs show phonemic contrasts among these: ayʌ *I,* aayʌ *he got it;* hinehgága *put it down,* zinehgága *I put it down;* dʌnihnohli *they'll bring cloth,* danihnohli *you and I will bring cloth;* zinʌ́ʌga *I did put it down,* zinʌ́ʌsga *I put it down now;* hnighdahésgo *did you know it already,* nighdahésgo *did you know it;* hdinúuga *take the sticks with you,* hinúuga *take the stick with you;* esdinúuga *you two bring the stick here,* ezdinúuga *you two bring the two sticks here;* isdinúuga *you two bring the stick here;* ogohiyuha *we all believe,* igohiyuha *we all (including you) believe;* dazinóli *I'm going to bring it,* dazíneli *I'll give him something;* dazinʌ́li *I'll send someone to get something;* ayósdana *it's been destroyed by someone,* uyósdana *it's been destroyed by him;* agihnóhohna *I'm thru bringing the cloth,* agihyóhohna *I'm through carrying;* dagóhasi *the rock will fall,* dagóhahi *the rock just now fell;* hinʌʌga *put it down,* zinʌʌga *I put it down;* gʌniga *I knock,* gʌhniga *he knocks;* disdalíi *many friends,* dizalii *two friends;* wagi *he went and got it,* dagi *he got them;* hwigi *you went and got it,* agi *he got it.*

5.2. Some reduction of the phonemic list is possible. The vowel i is apparently complementary to y and could be identified with it; and similarly for u and w. However, it is not yet certain that contrasts would not arise. Furthermore, the new phonemes consisting of i and y, and of u and w, would be a special class of vowels, having different distributions from other vowels (they would frequently occur in V-V, i.e. intervocalically, where other vowels occur rarely). As at present constituted the i and u vowels are quite similar in distribution to the other vowels, and the y and w consonants quite similar in distribution to the other consonants.

The possible identification of dl with l will not affect the phoneme list, but will affect the distribution of phonemes.

6. Distribution of phonemes.

6.1. Vowels occur initially, finally, before and after consonants or vowels, but only rarely between two vowels. All vowels occur in # -C, C-#, C-C. All vowels occur next to some other vowels (in C-V, V-C, V-#), including themselves. I.e. there are clusters of two, and rarely of three, vowels, including double vowels. However, a number of clusters of two vowels do not occur in our material, and few clusters of three vowels occur. A glottal stop is often pronounced between the two vowels of a cluster, especially when they are like vowels. Thus: ahnísgo hehói *do you live here;* zilóahi *I fell out already;* dʌnái *they're coming;* ziyaúga *I go after a stick;* ziyaaga *I come in;* daziyóusi *I'll die;* dazíʌsi *I sent it to him;* nanighdahéi *they already knew it;* gohidi nigageói *I lived here a long time;* geʌ́i *my country.*

6.2. Consonants occur initially (except for l), between vowels, and in particular cases next to other consonants. Double consonants do not occur, nor do consonants appear in final position. The only clusters of consonants that occur are: h before or between any consonant except h, m (i.e. h in # -C, V-C, C-C, where C represents any consonant other than h, m); s before d, g (including gw); gw, zw, dl (which may be reducible to l). Sequences of three or more

consonants occur; but except for sgw, they never contain a stretch of more than two consonants one of which is not h. Any two consonants not separated by h would have to be one of the clusters listed above: ahwi *deer;* danalhsgísgʌgi *they were dancing;* agwalhsdádlhnidi *I am about to sit;* dahzali *he'll kill you;* iyúsdi *like;* anadihdasgói *they drink;* zunanelhdi *they used to play;* gádlhgwogi *seven;* sgwadáginʌda *you knocked me down;* gadlóahi *I was coming down steps.*

6.3. Consonants and vowels are therefore distinguished in Cherokee not merely on the basis of phonetic differences but on the basis of distribution.

ANOTHER MIXTECO TONE PUN

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In a previous paper[1] I presented a text in which there were several plays on words. This word play involved tone. Either a complete pun was involved, or, in most of the instances, words were used which were identical except for their tones. These near homonyms in word play were there called *tone puns*.

The present paper presents a further short text, in which an additional tone pun provides the point to the story. The narrators are the same—Narciso and Angel Merecías. The text will first be presented, and then a brief commentary explaining the pun.

TEXT AND LITERAL TRANSLATION

kʷeⁿdú ʔəən sutù híín čáa ni-kà-sáa biko

[1. story one priest and man made feast]

ʔoⁿdè a-náʔán ní-ìo ʔəən sutù ʔíó tùʔun-de [2. at long-ago was one priest is story-of-him] ná-nì-sáa-de híín čáa nì-kà-sáa biko paskʷá. [3. what-did-he with men made feast easter.]

te-nì-kù-žani kəbə̀ kóo biko-ún. [4. and was-near day to-be feast-that-one.] te-nì-kana sutù-ún ṣinì čáa ká-kuu mažordomó, [5. and-called priest-that-one head men are master-of-feast,] nì-kà-s-ké-táʔan-de tùʔun ⁿdasa koo biko-ún, [6. they-put-words-together how would-be feast-that,] čì-kuní žakù ʔità híín žukú ñuù kʷíi, [7. because-need few flowers and palm branches green,] ʔáčí má-sutú-ún híín-de. [8. said the-priest-that-one to-them.] te-biko-ún ké-háʔá ʔoⁿdé domiⁿgú žatà paskʷá hà-nání dómiⁿgú ramú, [9. and-feast-that-one begins at sunday back-of easter which-called sunday branches,] te-ṣ-ⁿdáʔə ʔoⁿdè má-dómiⁿgú paskʷá-ún. [10. and-makes-to-end at the-sunday easter-that-one.]

žúan-na te-nì-táʔú sutú-ún tiñu nuù-dé, ʔáčí híín-de: [11. thereupon ordered priest-that-one word to-them, says to-them:] "van a buskar žukù ñuù kʷîî para santo ramo," ʔáčí sutù-ún híín-de. [12. go hunt žukù ñuù kʷîî for holy palm, says priest-that-one to-them.]

te-"si señor," nì-kà-kačì-de híín. [13. and yes sir, they-said to (him).]

te-nì-kee-de ká-noʔòn-de beʔe-de. [14. and went-they home house-theirs.] žúanná te-əⁿgà kəbə̀, te-nì-kee-de ká-hà-ⁿdúkú-de žukù ñuù kʷíi híín ñerú-de [15. thereupon another day, and-went-they look-they brush ...green (palm) with pals -its] ná-tùʔun nì-kaʔàn sutù-ún híín-de. [16. like said priest-that-one to-them.] ko-tú-ní-ká-hukùʔun ʔinì-de hà-žukú ñuù kʷíi hikán sutù-ún nuù-dé, [17. but-not-understand-in-them that palms asks priest of-them,] čì-nì-kà-hani ʔinì-de hà-žúku ñú-kʷii kíⁿgožo-de, [18. because-thought in-them that-mountain-of-fox should-go-they,] te-nì-hà-kožo-de čìi žuku-ún [19. and-went-they foot-of mountain-that-one] te-žúan nì-kà-hinì-de nuù ʔɔ́ən ñù-kʷii. [20. and-then saw-they one fox.] te-nì-kà-hinu té-žíí-de híín-tɔ́. [21. and-ran very-fast-they after-animal.] te-nì-kà-niʔìn-dé-tə̀ ká-ⁿdìso-de-tə̀ [22. and-caught-they-animal carry-they-animal] ní-na-hà-kožo-de híín-tɔ́ nuù sutú-ún. [23. return-they with-animal to priest-that-one.]

te-nì-kà-kačì-de híín sutú-ún: [24. and-said-they to priest-that-one:] "señor padre

[1] In IJAL 11.129 (1945) the phonetic symbolism has been explained, and more fully in IJAL 10.115 (1944). For the opposite type of text—one in which the Mixteco Indian makes errors in Spanish—see IJAL 11.219–24 (1945).

ya fwimos nosotros žuku ñú-kʷii," [25. sir father already went we mountain of-the-fox,] nì-kà-kaʔàn-de híín. [26. said-they to (him).]

te-nì-kačì híín-de, [27. and-said to-them,] "a ké indyo tan nesyo, [28. what indians so foolish,] yo les dihe ke fweran a buskar žukù ñuù kʷíì ke son palmas verdes, [29. I you told that go to find žukù ñuù kʷíì which are palms green,] i no žuku ñú-kʷii ke me tráen este maldito sorro," [30. and not mountain fox that to-me you-bring this miserable fox,] ʔáčí sutù-ún híín-de nì-kaʔàn nuù-dé hà-ní-kà-sá-kátá-de nuù. [31. says priest-that-one to-them said to-them because-mocked-they to (him).]

te-nì-kà-na-kiʔin-de ʔiči ká-noʔòn-de behe-de. [32. and-take-they road go-home-they house-theirs.] te-nì-ⁿdòo má-sutú-ún kití ʔinì hà-ná-tú-ká-niʔìn-dé žukù ñuù kʷíì čì-sa-ñù-kʷii nì-kà-niʔìn-dé [33. and-remained the-priest-that-one perturbed that-not-obtained-they palm branches but-just-fox obtained-they] hà-ní-kà-haʔàn-de žuku ñú-kʷii hà-ká-hà-ⁿdúkú-de žukù ñuù kʷíì núú. [34. when-went-they mountain fox that-seek-they palm branches supposed-to-have.]

nì-kuu. [35. complete-is.]

FREE TRANSLATION

The Story of Some Men Who Made a Feast

A long time ago there was a priest—so the story goes—who had some dealings with certain men one Easter time.

A festival was near at hand, and the priest called to him the men who were in charge. They arranged how the festival should be carried on. There would be needed a few flowers and palm branches. It would begin the previous Sunday—called Palm Sunday—and end on Easter Sunday.

So he said to the men, "Go hunt some žukù ñuù kʷíì for Palm Sunday."

"Yes sir," they replied, and went home.

The next day they went with their comrades to the mountain to hunt for palm branches, as they had been requested. However, they had not understood that it was palm branches which were asked for, but thought that they were to go to the mountain where foxes were—so there they went. Soon they saw a fox. They ran and ran after it, catching it; then they carried it back to the priest.

They said to him, "Father, we have gone to the mountain where the foxes were."

But he replied, "Oh what dumb Indians! I told you to go search for some žukù ñuù kʷíì, which are green palms—and not žuku ñú-kʷii, for which you have brought me this miserable fox."

So they took the road for home, leaving him behind—disturbed because he had not obtained the palm branches, but had received a fox instead of the palms which they ought to have gotten.

That's all.

COMMENTARY

Foreigner's Mispronunciation of the Pertinent Words (Phrase 12):

(van a buskar) žukù ñuù kʷíì (para santo ramo).

Go find some ....for Palm Sunday.

Native's Correct Pronunciation of the Pertinent Words (Phrase 7):

...(čì-kuní žakù ʔità híín) žukú ñuù kʷíì...

...because a few flowers and palm branches are needed...

Native's Misunderstanding of the Tones (Phrases 17–18):

ko-tú-ní-ká-hu-kùʔun ʔinì-de hà-žukú ñuù kʷíì... čì-nì-kà-hani ʔinì-de hà-žúku ñú-kʷii kí-ⁿgožo-de.

(*But they did not understand that it should have been*) *palm branches,* (*but they thought that they were supposed to go to*) *mountain where the fox* (*was*).

The word for *fox* is ñù-kʷii, with tone low on the proclitic and level tones on the second morpheme. *Mountain* is žuku,[2] with both

[2] The change from žuku to žúku is mechanical. Certain words, of which hà- *that* is one, have the power to cause certain tones of words which follow

syllables having level tones. In Mixteco, a frequent phrase type is to have one noun modified by a following noun. Thus, "Mountain fox", i.e., "mountain where the fox is", constitutes a very legitimate structure for them to understand.

The expression for *palms*, or *palm branches*, appears to be a similar type of construction, with an added modifier at the end. This additional modifier appears to be the adjective kʷíi *green*. The word žukù[3] means *bush*, or *brush*, or *herb*. The meaning of its following modifier is not too certain. The modifier ñuù is probably a noun—because of its position in the construction—but the only word with this phonetic structure known to the Mixtecos of San Miguel el Grande[4] is ñuù meaning *town*, which would appear to be unrelated to *palm branches*. Of the meaning of the phrase as a whole, however, there is no doubt; it appears frequently as a label for the small palm which grows wild in the lowlands surrounding this area, and which is imported by the local folks to weave into the hats and mats which are important in turn as some of the main items for export to Mexico as a whole.

The foreigner mispronounced the tone of kʷíi, giving it a pattern of high to low tones—kʷíî—instead of high to mid ones. This mistake in the usage of tones paralleled the falling intonation at the end of Spanish phrases, and opened the way for the misunderstanding reported. Instead of gathering palm branches, žukù ñuù kʷíi, they chased down a fox on the mountain, žuku ñú-kʷii.

them to change, provided that the following words are also of the requisite type. The lists which can or cannot cause changes are arbitrary ones, but are chosen from morphemes with one of four tone patterns such as the mid-low pattern of the innate full form of hà-. The morphemes which may have certain tones changed to others—usually to high—include all words with certain tone patterns, namely, those whose tones are mid mid (as here), or mid low, or low high, or low mid. For the mid mid form of žuku, see Phrases 19, 25, 30, 34. For detailed analysis of the tonal changes, see *Tone Languages*; for Mixteco grammar, see IJAL 10.113–38.

[3] The innate tonal pattern of *brush* is mid low, as in žukù. The change to mid high žukú is a mechanical one following hà-. See note three. For similar change after híín, see Phrase 7. For the mid low form, see Phrases 12, 15, 29, 33, 34.

[4] Of Oaxaca, Mexico.

YUMA I: PHONEMICS

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1. Introductory remarks
2. Consonantal phonemes
3. Positions of consonants
4. Consonant clusters
5. Metathesis
6. Vowel phonemes
7. Accented vowels
8. Vowels in pre-accentual position
9. Vowels in post-accentual position
10. Inorganic ə
11. Inorganic ə (continued)

1. Introductory remarks. Material on Yuma was collected in the course of two visits of three months each to the Yuma Indian Reservation in south-eastern California. The first trip, in 1935, was made possible by the California SERA and the University of California. The second, in 1938, was made on funds provided by the Department of Anthropology, University of Chicago. This manuscript was completed in 1940.

In former times, the Yuma (or K^{w}acá·n) tribe contained three local divisions, known as the matxal^{y}caδóm *those who turned north*, kave·l^{y}caδóm *those who turned south*, and ʔan^{y}a·l^{y}caδú·m *those who turned east*. There are said to have been sub-dialectic differences in the speech of these three divisions, but the Yuma speech community of today, numbering approximately 750, is not differentiated dialectically.

The author's thanks are due to his chief informants, Bernard Jackson, Patrick Miguel, and Luke Homer, for their untiring collaboration; to A. L. Kroeber, at whose instance the study was originally undertaken; and to Harry Hoijer, under whose supervision the manuscript was written. This manuscript is to be published in a series of several papers of which this is the first of two papers devoted to Yuma phonology.

A discussion of the phonology of Yuma is primarily a discussion of the word as a phonologic phenomenon. Some phonemes are limited with respect to the positions in which they may occur in the word and some phonemes have a different phonetic character in one position in the word than in another. A discussion of the phonology of Yuma must deal with the phonologic events which occur when words come in contact with one another. The phonetic character of a given word may be different in context from what it is in isolation.

The word may be monosyllabic: mó· *well, now*, té·k *he brings it closer;* or it may have as many as eight syllables: al^{y}n^{y}i·n^{y}a·x^{w}il^{y}-vətəxal^{y}a *I would associate with ye.* The word, even if monosyllabic, always has an accented syllable: xú·l^{y} *cholla cactus*, á·pk *he throws it;* and may have two accented syllables: ʔawíyú *let me ao it.*

2. Following are the consonantal phonemes of Yuma:

Stops: p, t, t^{y}, ṭ, k^{y}, k, k^{w}, q, q^{w}, ʔ.
Affricate: c.
Spirants, voiced: v, δ.
Spirants, voiceless: s, š, x, x^{w}.
Nasals: m, n, n^{y}, ṇ.
Laterals, voiced: l, l^{y}.
Laterals, voiceless: ɬ, ɬ^{y}.
Semi-vowels: w, y.
Trill: r.

The diacritic superior ^{y} marks palatalized consonant, superior ^{w} marks labialized (rounded) consonant; period under character marks cacuminal (retroflex) consonant.

For purposes of discussion, the consonants

may be grouped into the following series: stops, spirants, and affricate; liquids; palatalized liquids; and semi-vowels.

STOPS, SPIRANTS, and AFFRICATE

All stops are unaspirated and voiceless. As a class, they show no systematic positional variations. A few individual phonemes, however, vary phonetically in some phonetic contexts.

The phoneme k^y before the vowels a, a·, e, and e· is a voiceless palatalized prepalatal stop: ak^{y}á·m *he shoots*, k^{w}ak^{y}ék *he asks for it;* k^y before the vowels i and i· is very weakly palatalized and is hardly distinguishable from k before the same vowels: mak^{y}ík *where*, al^{y}ask^{y}í·k *he continues to be, do;* k^y does not occur before the vowels o, o·, u, and u·.

The phoneme k^w before the vowels a, a·, e, e·, i, an i· is a voiceless labialized palatal stop: ?ack^{w}aráv *the sick one*, šak^{w}íl^{y}k *she sews.* When k^w occurs before the vowel u·, the labialization disappears: k^{w}u·cécən^y [kɔ·cécən^y] *the leader*, k^{w}u·xamí· [ku·xamí·] *the procreator.* In this context, k^w is phonetically indistinguishable from k in the same context. The orthography k^w will be retained, however, because a labialized pronunciation of k^w is accepted as overcareful by the native speakers, while a labialized pronunciation of k in this context (ku·tara·?úyk *fix it! prepare it!*) is denied as a mispronunciation. The phoneme cluster k^{w}a (k^w + vowel a) when followed by a labial consonant or by k^y, k, or k^w is pronounced as [ku]: k^{w}apáy [kupái] (< *apáy *to carry*) *the carrier*, k^{w}avatáy [kuvatái] (< *vatáy *to be big*) *the big one*, k^{w}akxó· [kukxó·] *woodpecker.* Again the orthography k^w is retained because an overcareful pronunciation is acceptable to native speakers.

The phoneme ? (glottal stop) is generally strong and clearly audible: ?a?áw *fire*, ?ora?ór *spherical.* In nouns which in the absolute form have an initial glottal stop, the glottal stop, together with the following vowel, is syncopated when a pronominal prefix is added: ?an^{y}vu·sapó (< ?an^y- *my* ?avu·sapó *abandoned home*) *my abandoned home*, ?an^{y}xáṭ (< ?an^y- *my* ?axáṭ *horse*) *my horse.* In some cases the syncopation is optional, the full and syncopated forms occurring alternately: ?an^{y}vá/?an^y?avá (< ?an^y- *my* ?avá *house*) *my house*, n^{y}amáṭ/n^{y}a?amáṭ (< n^y- *his* ?amáṭ *land*) *his land.* It is not clear whether the syncopation of ? under these circumstances is best regarded as a purely phonological occurrence, or whether it is not best explained by postulating two forms of the noun, the absolute and the possessed, in the latter of which the initial ? is regularly syncopated: ?an^{y}xaná·l^y (< ?an^y- *my* xaná·l^y possessed form of ?axná·l^y *gourd*) *my gourd*, n^{y}axamó (< n^y- *his* xamó possessed form of ?axmó *mortar*) *his mortar*). This type of alternation between the absolute and the possessed forms need be postulated only for nouns with absolute form in initial ?-. No other initial consonants of the noun stem are similarly syncopated.[1]

Like the stops, the spirants show no systematic positional variations. The phonemes v and x^w, however, require special comment.

Bilabial spirant v is absorbed by a following m or p: wal^{y}u·?á·mək (< *wal^{y}u·?á·vmak *they do not hear*, kaná·pək (< *kaná·vpak) *he tells it all.* In some cases, v+m becomes mm: ammaðú·m (< *avmaðú·m) *whatever you do.* This process is recognized and the forms are analyzed voluntarily by native speakers: ammaðú·m < av- *what, which, whatever* (relative object) maðú·m *you do.* The phoneme cluster ava becomes u· before a following v: u·vák (< *avavák) *wherever he is*, ammavák (< *avmavák) *wherever you are*, av?avák *wherever I am;* u·v?áwk (< *avav?áwk) *where he stands*, ammav?áwk (< *avmav?áwk) *where you stand*, av?av?áwk *where I stand.*

The phoneme x^w is a voiceless labialized palatal fricative: x^{w}ecax^{w}éc *oriole*, u·x^{w}í·rek *he drags it out.* Like k^w it loses its labializa-

[1] See also nominal abstracts in ?-.

tion before u·: xʷu·nʸó·venʸ [xɔ·nʸó·vənʸ] *his dodging*, xʷu·ʔá·vənʸ [xu·ʔá·vənʸ] *her jealousy*.

The affricate c varies in pronunciation from a voiceless dental affricate [ts] to a voiceless dental-alveolar affricate [tš]. This variation is more or less optional, but there is a tendency for one or the other pronunciation to occur more frequently in certain contexts than in others. The dental pronunciation of c is the more frequent when c occurs in the initial or final position in the word, in the medial position followed by o, o·, u, or u·, or as the initial member of a consonant cluster: cacu·tú·ck *they coax him*, camʔaðúlʸc *the ant*, cacná·k *he stops them*. The dental-alveolar pronunciation of c is the more frequent when c occurs in the medial position in the word followed by a, a·, e, e·, i, or i·: acá·m *he lays (a bunch) down*, acéməc *he makes a mistake*, ací·ṭ *rectum*. When followed by t, c is pronounced as s, especially in rapid speech: asó·ctək *they ate*, aʔícta ʔa *so they said*. The affricate c in the final position, preceded by t or ṭ is pronounced as s: ʔamáṭc *the land*, ʔaxmátc *the pumpkin*.

LIQUIDS

The liquids include the phonemes m, n, ṇ, l, ł, and r. Of these, m, n, l, and r form a group sharing a certain type of positional variation, while ṇ and ł are of such rare occurrence that little can be said about them.

The phonemes m, n, l, and r occur in two forms, short and long. They occur in long form (1) when preceded by an accented short vowel: naqámek [naqám·ək] *he touches it*, acének [ʿacén·ək] *he descends*, salasál [salasál·] *porous*, tamaʔórek [tamaʔór·ək] *it is full;* (2) when following a short vowel and preceding an accented vowel: namák [nam·ák] *he leaves it*, anák [ʿan·ák] *he sits*, alú·k [ʿal·ú·k] *he smears*, arúvek [ʿar·úvək] *it is dry;* and (3) as initial members of consonant clusters when preceded by a short vowel: ʔankʸí· [ʔan·kʸí·] *grass sp.*, xatalwé [xatal·wé] *coyote*, ʔarkúyk [ʔar·kúik] *he conceals*, with the exception that m or n followed by a homorganic stop is always short: a·ʔámpek *he bends over*, ʔašént *one*. In all other contexts, m, n, l, and r occur in the short form.

The phoneme r is ordinarily a tip-trilled r (similar to the Spanish r), but when preceded by š and an unaccented short vowel it has a retroflex pronunciation: šaréq [šařéq] *he grasps it*, mašaráyk [mašařáik] *he is angry*. When a long vowel intervenes between š and r, r is tip-trilled as in all other contexts: ša·rí·q *a handle*, mašu·ráyenʸ *his anger*.

The phoneme ṇ (voiced cacuminal nasal) escaped the attention of the investigator until the very last stages of field-work. It was reliably recorded in only one stem, ṇaví· (in malʸaqé ṇaví· *soft palate, uvula;* contrast naví· *father's older brother*). In all probability it occurs more frequently than the records show, but was not distinguished from n because it does not contrast with n in any case except the one mentioned. Informants insisted on ṇ as a distinct phoneme but commented that it was of very rare occurrence.

The phoneme ł (voiceless lateral) occurs rarely. It does not seem to be lengthened under the same circumstances in which other liquids are lengthened, but is always pronounced as a single consonant: naméłk *he is conceited*, nʸi·xáłxa *it will fall apart*. The positions in which ł may occur will be noted below.

PALATALIZED LIQUIDS

The palatalized liquids are nʸ, lʸ, and łʸ. In most contexts these phonemes are strongly palatalized: ʔanʸá· *sun*, alʸúlʸk *he cooks*, taxasílʸ *rough, corrugated*. When two palatalized liquids come in contact with each other, the first loses its palatalization but is articulated at a point slightly higher than that at which the corresponding unpalatalized liquid is articulated: nu·mínʸnʸa *their passing by*, alʸnʸi·ðú·ck *he thinks*, kʷatxasílʸnʸa *that corrugated one*. A palatalized liquid may also (but not

uniformly) lose its palatalization when followed by c: u·ðúcənʸc *his actions*, xa·lʸ-caðú·m *Halchidhoma*.

SEMI-VOWELS

The semi-vowels, w and y, occur in two forms, consonantal and vocalic. They occur in the consonantal form when in the initial position in the word, when intervocalic, and as final members of consonant clusters: wa·rávək *he forbids*, awí·m *he does*, a·cwísk *he sneezes*, ya·lák *goose*, ayú·k *he sees*, ʔacya·šá·lʸk *he craves things, he has cravings*. They occur in the vocalic form when in the final position in the word and as initial members of consonant clusters: ʔaʔáw *fire*, acéwk *he creates*, vatáy *big*, kamé·yk *he brings for him*, apó·yk *they die*.

Vocalic w and y are never treated as vowels: they are never accented or syllabic. In syllabification they are treated as consonants.[2]

3. Positions of consonants. Consonants may occur in six positions in the word: (1) initially, (2) finally, (3) intervocalically preceding an unaccented vowel, (4) intervocalically preceding an accented vowel, (5) as initial member of a consonant cluster, (6) as final member of a medial consonant cluster.

Most consonants occur in all six of the possible positions. A certain number of phonemes, however, are defective in that they do not occur in some positions.

There are two classes of defective phonemes: Class I includes the phonemes ð, kʸ, kʷ, xʷ, qʷ, and ʔ; Class II includes the phonemes ɬ, ɬʸ, and tʸ.

Defective phonemes of Class I occur in the initial position, intervocalically preceding an unaccented vowel, intervocalically preceding an accented vowel, and as final members of medial consonant clusters. They do not occur in the final position, and with the exception of kʷ they do not occur as initial members of consonant clusters.[3]

Defective phonemes of Class II occur in the final position, intervocalically preceding an unaccented vowel, and as initial members of consonant clusters. They do not occur in the initial position, intervocalically preceding an accented vowel, or as final members of medial consonant clusters.[4]

The distribution of the phoneme ṭ is similar to that of defective phonemes of Class II. It occurs in the final position, intervocalically preceding an unaccented vowel, and as initial member of consonant clusters. It occurs in the initial position in only one stem (ṭáw ṭáw *bird sp.*) and intervocalically preceding an accented vowel in only one stem (*u·ṭáw *to defeat*). It does not occur as the final member of a medial consonant cluster.

4. Consonant clusters. Consonant clusters may occur medially or finally in the word, but never initially. Medial consonant clusters are of two types; biconsonantal and triconsonantal. Final consonant clusters are never of more than two consonants.

Medial biconsonantal clusters actually found are: pt, pʔ, pc, ps, pš, px, pm, pl; tp, tt, tkʸ, tk, tkʷ, tq, tqʷ, tʔ, tc, tv, tð, ts, tš, tx, tm, tn, tnʸ, tl, tlʸ, tw, ty, tr; tʸq; ṭp, ṭt, ṭk, ṭkʷ, ṭʔ, ṭc, ṭv, ṭs, ṭš, ṭx, ṭm, ṭn, ṭnʸ, ṭlʸ, ṭw; kp, kt, kk, kʔ, kc, kv, ks, kš, kx, km, knʸ, kl; kʷʔ, kʷs, kʷš; qt, qʔ, qc, qv, qð, qš, qx; cp, ct, ckʸ, ck, ckʷ, cq, cqʷ, cʔ, cc, cv, cð, cs, cš, cx, cxʷ, cm, cn, cnʸ, cl, clʸ, cw, cy, cr; vt, vkʸ, vk, vʔ, vc, vs, vš, vx, vn, vnʸ, vlʸ, vr; sp, st, skʸ, sk, skʷ, sqʷ, sʔ, sc, sv, sx, sxʷ, sm; šp, št, škʸ, šk, škʷ, šqʷ, šʔ, šc, šv, šð, šx, šm, šnʸ, šlʸ; xp, xt, xkʸ, xk, xkʷ, xʔ, xc, xv, xx, xm, xn, xnʸ, xl, xlʸ, xy; mp, mt, mkʸ, mk, mkʷ, mʔ, mc, mv, ms, mš, mx,

[2] See also **4.**

[3] The morphological corollary is that they do not occur as final stem consonants.

[4] The morphological corollary is that they occur as final stem consonants, but not as initial or medial stem consonants.

mx^{w}, mm, mn, mn^{y}, ml, ml^{y}, my; np, nt, nk^{y}, nk, n$^{?}$, nc, nv, nx, nm, nn^{y}; n^{y}p, n^{y}t, n^{y}k, n^{y}k^{w}, n^{y}$^{?}$, n^{y}c, n^{y}v, n^{y}š, n^{y}x, n^{y}x^{w}, n^{y}m, n^{y}n, n^{y}n^{y}; lp, lt, lk, l$^{?}$, lc, lv, lx, lm, lw; l^{y}p, l^{y}t, l^{y}k^{y}, l^{y}k, l^{y}k^{w}, l^{y}q, l^{y}$^{?}$, l^{y}c, l^{y}v, l^{y}ð, l^{y}š, l^{y}x, l^{y}x^{w}, l^{y}m, l^{y}n, l^{y}n^{y}, l^{y}l^{y}, l^{y}w, l^{y}y; łx; ł^{y}n^{y}; wp, wt, wc, wv, wš, wx, wx^{w}, wm, wn^{y}, wy; yp, yt, yc, yv, ys, yx, ym, yn^{y}, yl^{y}; rt, rk, rq, r$^{?}$, rc, rv, rx, rm, rn^{y}.

Geminate clusters are pronounced as long consonants; tc, ts, tš, ṭc, ṭs, ṭš, are phonetically distinct from the variants of the phoneme c, and are pronounced as [t.ts], [t.s], and [t.š], [ṭ.ts], [ṭ.s], and [ṭ.š], respectively.

The absences are partly accounted for by the following considerations: ð, k^{y}, x^{w}, q^{w}, and ? do not occur as initial members of consonant clusters; t^{y}, ṭ, ł, and l^{y} do not occur as final members,[5] ṇ, a very rare phoneme, is not found in any consonant clusters; v is absorbed by a following m or p.

Medial triconsonantal clusters are limited to two types: (1) those whose final member is ?: aðíct$^{?}$aš *it has gone to seed*, kamémt$^{?}$aš *he has brought it over there;* and (2) those containing as one member (usually as medial member) k^{w}, n^{y}, or l^{y}: $^{?}$an^{y}k^{w}cu·mpáp *we four*, $^{?}$ašl^{y}mák *my back*, $^{?}$an^{y}cxá·ṭ *my horses.* Medial triconsonantal clusters of either type are rare.

Final consonant clusters are limited in number by the inability of certain consonants to stand in the position of final member of a final consonant cluster. The phonemes ð, k^{y}, k^{w}, x^{w}, q^{w}, and ?, which do not occur in the final position, cannot be final members of final consonant clusters; no voiced consonant can be the final member of a final consonant cluster; t^{y}, ṭ, s, x^{w}, ł, and l^{y} never occur as final members of final consonant clusters.

Final consonant clusters may then be classified according to their final members. Those which do occur are illustrated by the following examples:

[5] See 3.

Ending in -k: aðápk *it is split*, awétk *he did it*, qat^{y}aqát^{y}k *he is thin-waisted*, $^{?}$axóṭk *it is good*, šaxá·ck *it melts*, $^{?}$axásk *it is greasy*, avéšk *he runs*, a$^{?}$óxk *he coughs*, namín^{y}k *they pass by*, ax^{w}él^{y}k *he digs*, naméłk *he is conceited*, aðáwk *he takes it*, $^{?}$alá·yk *it is bad.* These may be summarized by saying that k may be the final member of any final consonant cluster except one whose initial member is a defective phoneme of Class I (ð, k^{y}, k, k^{w}, q^{w}, and ?), the voiced spirant v, a voiced liquid (m, n, (ṇ?) l, and r), q, or k. The last two (q and k) when preceded by a vowel, absorb a following final k: $^{?}$anóq < *$^{?}$anóqk *it is small*, anák < *anákk *he sits.*

Ending in -q: $^{?}$amáṭ kan^{y}$^{?}$ásq *insect sp.*, kamtó·šq *swallow*, k^{w}ampán^{y}q *bat*, maðó·l^{y}q *sweet.*

Ending in -c: $^{?}$axmátc *the pumpkin*, $^{?}$amáṭc *the land*, $^{?}$i·pá·n^{y}c *that man*, cam$^{?}$-aðúl^{y}c, *the ant*, $^{?}$a$^{?}$áwc *the fire*, antáyc *his mother.*

Ending in -t: xanapá·ct *it was icy*, avéšt *he ran*, $^{?}$amóxt *place-name*, $^{?}$ašént *one.*

Ending in -p: té·mp *moving farther off*, tu·mánp *song-series name*, k^{w}awatpawátp *lace-wing mosquito.*

5. Metathesis.—In a few cases the positions of two consonants in a medial consonant cluster are the reverse of what would be expected by a morphological analysis. Thus kacací·ck *he steals* with the substitution of m- (2nd pr. pronominal prefix) for zero- (3rd pr. pronominal prefix) becomes mackací·ck *you steal*, while the expected form should be makcací·ck. Similarly kacan^{y}$^{?}$óq *he bends things* with the substitution of k- (imperative prefix) for zero- (3rd pr.) becomes kackan^{y}$^{?}$óq *bend things*, while the expected form would be kakcan^{y}$^{?}$óq; vakaléṭk *he rises on his hind legs* with the substitution of $^{?}$- (1st pr. pronominal prefix) for zero (3rd pr.) becomes $^{?}$akvaléṭk *I rise on my hind legs* rather than $^{?}$avkaléṭk.

This type of metathesis is sporadic in

occurrence and not consistently carried out. Thus ʔakcu·wámpək *we conquer* (cf. kacu·wámpek *they conquer*) without metathesis, while if metathesis were consistently carried out, one would expect to find ʔacku·wámpək.

6. The vowel phonemes of Yuma may be divided into two groups from the point of view of quantity: short vowels and long vowels. The distinctiveness of length as a phonemic feature of the vowel is shown by such contrasts as ʔa·vé *snake*, ʔa·vé· *mouse;* i·ðó *eye*, i·ðó· *tooth*. The duration of accented vowels is somewhat less than that of unaccented vowels. This feature is more noticeable in the case of long vowels than of short vowels. Thus the accented á· of ʔa·ná·lʸ *mesquite* is noticeably shorter than the unaccented a·, while the difference in length of the two a's in ʔavá *house* is much less noticeable.

Initial vowels are pronounced with an aspirated attack: avá·k ['avá·k] *he arrives*, i·má·ṭ ['i·má·ṭ] *body*, u·xʷá·lʸk ['u·xʷá·lʸk] *they dig*. Final accented short vowels are released with a sharp, clearly audible aspiration: ʔamó [ʔam·ó'] *mountain sheep*, ʔakʷé [ʔakʷé'] *cloud*, ʔaxmá [ʔaxmá'] *quail*. Aspiration occurs, however, only when the word is pronounced in isolation, or, in context, when an initial vowel is preceded by a pause, and a final accented short vowel is followed by a pause. Other final vowels are released without aspiration: paʔi·pá· *person*, ayú·xa *he will see*, nʸá·vi *there*.

With relation to accent, the vowel may occur in three positions in the word: pre-accentual, accented, and post-accentual.[6] The significance of these positions lies in the fact that not all vowel phonemes occur in all positions, and that the positional variants may be different in one position from what they are in another. Thus u· in the accented position always has the quality of *oo* in the English *food;* in the pre-accentual position u· sometimes has the quality of *oo* in English *food*, sometimes the quality of *o* in English *morn*.[7]

7. Accented vowels. Ten vowel phonemes occur in the accented position, five long and five short:

á (as *a* of German *Mann*): ʔamáṭ *land*, atápk *he throws*.

é (as *e* of English *pet*): namé *wildcat*, axʷélʸk *he digs*.

í (as *i* of English *pit*): awík *he helps*, ʔapílʸ *hot*.

ó (as *o* of German *Gott*): ʔampóṭ *dust*, aðóxa *he will do*.

ú (as *u* of English *put*): ašúc *younger brother*, ʔakúc *old*.

á· (as *a* of English *father*): ayá·k *he goes*, ʔaxʔá· *cottonwood*.

é· (as *e* of German *Weh*): ʔamé· *high*, té·k *he brings closer*.

í· (as *ea* of English *bead*): ʔací· *fish*, maní·š *scorpion*.

ó· (as *o* of German *Sohn*): ató·k *he is sated*, xó·r *gravel*.

ú· (as *oo* of English *food*): aštú·m *he gathers*, ayú·k *he sees*.

8. Vowels in pre-accentual position. The occurrence of the vowel phonemes in the pre-accentual position is correlated to some extent with morphological factors.

In unreduplicated forms, a, a·, and i· occur pre-accentually in both themes and non-thematic prefixes; u· and u occur only in themes; e, i, o occur only in non-thematic prefixes, o· occurs as a product of contact between an element o of a prefix and a following element a of a theme. The vowel a also occurs as an inorganic vowel.

The phoneme a· has the quality of accented á· and is found preceding all

[6] When a word contains two accents, the first accent in the word is always primary. Thus all vowels in the pre-accentual position are unaccented, while vowels in the post-accentual position may be unaccented or may bear a secondary accent. The vowel which bears the primary accent is in the accented position. See also **16.**

[7] See **8.**

accented vowels: a·ðápk *he splits it*, a·méləк *he wears it as a belt*, ta·pí·ţ *blanket*, a·nʸórək *he writes*, nʸa·kú·lʸ *ladder*.

When preceding an accented á, á·, í, í·, ú, or ú·, i· has the quality of accented í·: ʔaci·mák *he dances*, i·xú· *nose*, mi·sí·lʸ *thigh*. When preceding an accented é, é·, ó, or ó·, i· generally has the quality of accented é·, although in careful pronunciation it may be pronounced with the quality of accented í·: vi·yémək [vɛ·yém·ək] *he goes away*, i·ðó ['ɛ·ðó] *eye*, nʸi·nʸu·só·yk [nʸɛ·nʸɔ·só·ik] *he feeds us*. If, however, an unaccented a· intervenes between i· and an accented é, é·, ó or ó·, i· has the quality of accented í·: nʸi·ka·taqʷérək *follow him*. When followed immediately by another unaccented vowel, i· has the quality of accented í· regardless of the quality of the accented vowel: wi·u·vsó·yk [wi·ɔ·vsó·ik] *he curses him*.

When preceding accented á, á·, í, í·, ú, or ú·, u· has the quality of accented ú·: u·šák *he stings him*, u·lʸík *he crushes it*, u·má·yk *he feeds him*, u·tú·rvək *he plays shinny*. When preceding accented é, é·, ó, or ó·, u· has the quality of accented ó·: u·kʷépšək ['ɔ·kʷépšək] *he stretches it*, u·ðóxənʸ ['ɔ·ðóxənʸ] *his future action*, u·yé·yk ['ɔ·yé·ik] *he breathes*, u·cu·yó·yk ['ɔ·cɔ·yó·ik] *he shows*. If an unaccented a· intervenes between u· and an accented é, é·, ó or ó·, u· has the pronunciation of accented ú·: u·pa·xkʸé·k *he arranges them by sevens*.

Unaccented o·, with the quality of accented ó·, is found in the pre-accentual position in a very few words. In all cases it can be shown to be derived from unaccented o plus a: ðo·tárək (< *ðoatárək) *he is blind*, ðo·láwk (< *ðoaláwk) *he turns his head* (an alternative pronunciation ðu·láwk for ðo·láwk is also acceptable and is interesting as a case of overcorrection in accordance with implicit laws of vocalic harmony).

Unaccented a varies in pronunciation between the qualities of accented á and accented é. The pronunciation with the quality of á is the more frequent. Although the variation in sound is optional, the pronunciation with the quality of é tends to occur more frequently when a is (1) preceded by t, c, s, š, nʸ, or lʸ, or (2) followed by t, ð, c, s, š, nʸ, kʸ, r, or y. Thus a is pronounced with the quality of é in the following cases: asó·k *he eats meat*, acá·m *he lays a bunch down*, aðí·k *he comes*, akʸá·m *he shoots*, ayérek *he flies*, šatu·mácvək *they dream*, tatu·pí·ţk *they cover*, talʸpó *road runner*, cacayécmək *he turns them loose*.

Unaccented a may have the quality of accented í when preceding nʸ, lʸ, or y, especially when (1) unaccented a is itself preceded by kʷ, w, or ʔ, or (2) nʸ, lʸ, or y is followed by a high vowel: ayú·k *he sees*, ki·cayíca *his friends*, ʔanʸéwk *it vanishes*, walʸaðómək *he is unable*, kʷanʸxu·márvənʸc *the father*.

The phoneme a tends to assimilate to the quality of a following or preceding vowel from which it is separated by a glottal stop: aʔérək ['ɛʔér·ək] *he is startled*, aʔóxk ['ɔʔóxk] *he coughs*, caʔú·lʸ [cuʔú·lʸ] *arrow-point*, viʔavák [viʔivák] *here I am*. In careful pronunciation, it is always heard as [a].

The phoneme a occurs as an inorganic vowel (i.e., a morphophonemic zero), especially between the first two consonants of a word:[8] taʔaxʷéţk (< *tʔaxʷéţk) *he reddens it*, calʸaví·k (< *clʸaví·k) *he measures, fits it*, šamaðí·k (< *šmaðí·k) *he does not know*, ʔaʔanʸéwxa (< *ʔʔanʸéwxa) *I will disappear*. It is phonetically identical with organic a in the same contexts: taʔúlʸk (< *taʔúlʸk) *he carries it in the hand*, calʸík (< *calʸík) *he crushes it*, šamá·k (< *šamá·k) *he dreams*, ʔaʔávək (< *ʔaʔávk) *I hear*.

Unaccented e occurs rarely in the pre-accentual position. Its quality is that of accented é and is not affected by the quality of following vowels: weyma·xá·v *centipede*, xʷeyamánək *he is severely injured*, xʷeyu·má·nvək *they are severely injured*.

Unaccented i in the pre-accentual position

[8] Initial consonant clusters do not occur in Yuma. See **4**.

has the quality of accented í: nʸikvaðúk *he faces towards here.* In the majority of cases, it appears to be a shortened form of unaccented i·: nʸiʔanamák (< nʸi· *them* ʔanamak *I leave*) *I leave them* (cf. nʸi·manamák *you leave them*), viʔavák (< vi· *here* ʔavák *I am situated*) *I am here* (cf. vi·mavák *you are here*).

Unaccented o in the pre-accentual position has the quality of accented ó: ðonʸamé·k *he is dizzy*, ðošu·nʸá· *his eyelash.*

Unaccented u occurs in the pre-accentual position in only one theme: muká *ready.*

Unaccented u and o also occur, even in careful pronunciation, as products of assimilation of unaccented i to the quality of a following vowel from which it is separated by a glottal stop: vuʔu·vá·k (< *viʔu·vá·k) *I am present*, voʔu·nó·k [vəʔə·nó·k] (< *viʔu·nó·k) *we are present.*

In reduplicated forms, the syllable containing the accented vowel is reproduced in the pre-accentual position. The vowel of the reproduced syllable has the quality of the corresponding accented vowel. All short vowels and the long vowels a·, i·, and u· occur in the pre-accentual position in reduplicated forms: salasál (< *asál) *porous*, qʷeraqʷér (< *aqʷér) *sharp-pointed*, šilʸašílʸ (< *ašílʸ) *long and thin*, toxatóx (< *atóx) *spotted*, musamús (< *amús) *crumbly*, la·xalá·x (< *alá·x) *glittering*, ši·lʸaší·lʸ *very long and thin*, ta·mu·samú·sk (< *amúsʔ) *he rubs (sand) into it.* The non-occurrence of e· and o· in such forms may be regarded as fortuitous.

In some cases, ablaut of the accented vowel of a reduplicated form is accompanied by a change in the quality of the reproduced vowel in the preaccentual position: ʔonaʔónək (< *aʔón) *it is short, curtailed*, ʔunaʔú·nək *they are short;* ʔoraʔórək (< *aʔór) *it is spherical*, ʔuraʔú·rək *they are spherical.* In other cases no change occurs: taqʷeraqʷérək (< *aqʷér) *he sharpens it*, tatqʷeru·qʷí·rək *they sharpen them.*

9. Vowels in post-accentual position. The following vowels are found in the post-accentual position: a, e, i, u, a·, i·, and u·. These all have the qualities of the corresponding accented vowels, regardless of the quality of the accented vowel: ayú·xa *he will see*, ʔaʔáveʔe *I might hear*, awíntik *he does it again*, atʔétum *it always bears abundantly*, ʔayó·vlʸá· *we would like to see it*, maʔávci· ʔaʔétk *I would like you to hear*, aðótú·m *is it always so?*

Post-accentual u, a·, and u· occur most frequently as bearers of a secondary accent.

10. Inorganic ə. A semi-whispered vowel of variable quality (ə) occurs in the post-accentual position in certain specific contexts. It occurs most frequently with the phonetic character of a murmur or shwa, but after bilabial consonants it may have an u tinge and after dental and cacuminal consonants it may have an e tinge.

The vowel ə occurs in the following types of context:

(1) Preceding a final consonant and preceded by a consonant which cannot combine with the final consonant to form a consonant cluster: aʔávək (< *aʔávk) *he hears*, vavárək (< *vavárk) *he fails*, u·sícenʸ (< *u·sícnʸ) *his drinking*, cá·məlʸ (< *cá·mlʸ) *all of them.*

(2) Following a medial consonant cluster and followed by a single consonant: a·ʔámpək (< *a·ʔámpk) *he bends over*, mašéctexa (< *mašectxa) *they will name you*, ašúccək (< *ašúcck) *they call him younger brother*, a·páxmək (< *a·páxmk) *he throws it away.*

(3) Following a single consonant and followed by a consonant cluster nʸc, nt, nk, or ct: u·ðúcənʸc (< *u·ðúcnʸc) *his actions*, awétəntik (< *awétntik) *he did it again*, aʔétənka (< *aʔétnka) *did he say so?* alʸnʸa·pəctaʔa (< *alʸnʸa·pctaʔa) *they threw me in.*

(4) Following a single consonant preceded by ə and followed by a single con-

sonant: caxí·rməcəxa (< *caxí·rmcxa) *they will burrow through*, xʷa·ðú·cvəcək (< *xʷa·ðú·cvck) *they dodge*.

(5) Following a consonant cluster and followed by a consonant cluster nʸc, nt, or one whose final member is ʔ: u·táqšənʸc (< *u·táqšnʸc) *his jumping*, asó·ctəntik (< *asó·ctntik) *they ate again*, aðúctəkʔaš (< *aðúctkʔaš) *they did so*.

(6) Between two single consonants which may combine to form a medial or final consonant cluster: kaná·pək (< *kaná·vpak) *he tells it all*, u·tá·pək (< *u·tá·ppk) *they throw*, u·ší·tək (< *u·ší·tvk) *they name*, u·pácək (< *u·pácvk) *they lie down*, aʔépək (< *aʔépak) *he did indeed say*, walʸaðómətəxa (< *walʸaðómatxa) *he will be unable*.

11. Inorganic ə (continued). The status of the phoneme ə is evidently peculiar as compared with that of other vowel phonemes. It occurs only in the post-accentual position and is never accented. It does not occur finally, but only between consonants. And, with the exceptions noted above, in contexts (3) and (5), it cannot be followed by a consonant cluster.

The occurrence of ə in contexts (1)–(5) may be accounted for in terms of the rules governing consonant clusters. It occurs (1) between two consonants which cannot form a final cluster, (2) between the second and third, or (3) between the first and second of a series of three consonants which cannot form a consonant cluster, (4) following the second and the third, or (5) between the second and the third of a series of four consonants which cannot form a consonant cluster. In all these contexts ə is in contrast with other post-accentual vowels (aðótəm *he doing* and aðótum, *he always does*, acéntək *he descended* and acéntik *he lays several down again*, aʔétəm *he saying* and aʔétám *did he say?*) and in complementary distribution with zero (šaxá·ck *it melts* and šaxá·ccək *they melt*, aʔétk *he said* and aʔíctək *they said*).

The occurrence of ə in context (6) cannot be accounted for in terms of the rules governing consonant clusters. In this context, furthermore, ə is in contrast with zero (atá·pk *he throws them* and u·tá·pək *they throw*, aší·tk *he names them* and u·ší·tək *they name*). Analysis of the forms in which ə occurs in this context shows that the single consonant preceding ə is derived from a morphophonemic consonant cluster, one of whose members has been "absorbed" by the other (as v by a following m or p, p by a preceding p, v by a preceding voiceless stop or affricate when the following consonant is k[9]) or from a morphophonemic consonant + vowel the vocalic element of which has been syncopated.[10]

Single consonants thus derived are "strengthened"; i.e., though phonemically identical with single consonants derived from single morphophonemes, they are treated phonologically as consonant clusters rather than as unit phonemes. In forming the hortatory, for instance, themes ending in a (morphophonemically) single consonant take the suffix -ú, themes ending in a consonant cluster or a "strengthened" consonant take the suffix -iyú. Thus aʔávú (< *aʔávú) *let him hear*, aʔávciyú (< *aʔávciyú) *let them hear;* kaná·vú (< *kaná·vú) *let him tell*, kacu·náviyú (< *kacu·návviyú) *let them tell;* ʔanayémú (< *ʔnayémú) *let us go away*, walʸaʔémiyú (< *walʸaʔémaiyú) *let him not be*.

The occurrence of ə in context (6) is thus congruent with its occurrences in contexts (2) and (4). Although its occurrence in context (6) establishes ə as a genuine phoneme, morphological analysis shows that it always represents a morphophonemic zero.

[9] For the evidence in support of the last, see the sections on the distributive plural, especially **46a-b, 48.**

[10] See **13b.**

TOTONACO PHONEMES

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1. The argument. In Totonaco, a phonetic glottal stop is intimately linked with the preceding vowel, usually giving it laryngeal timbre. The stop does not function like a normal consonant either in distribution or in phonological process. These characteristics lead to the setting up of vocalic nuclear phonemes composed either of pure short vowels, or pure long vowels, or short or long vowels plus laryngeal (glottalic) influence. No specific claim is entered for glottal stop as a "prosodic feature" although the phenomena are strikingly suggestive of the possibility of such an interpretation; the relation of glottal stop to preceding vowel in a close nuclear tie is the least that can be satisfactorily postulated.

A system of only three basic vowel qualities presents a wide variety of free and conditional variants; combined with the high frequency of laryngealized vowels, this gives an unusual phonetic character to the language.

2. Introduction. The latest available census of Mexico (1930) gives the number of Totonaco speakers at 90,425 of whom monolinguals constitute about 65 percent. The bulk of these Indians live in the mountains of the northeastern corner of the state of Puebla, Mexico and that part of the state of Veracruz adjoining it there.

The study was made during various field trips over the last four years to the Totonaco town of Zapotitlán de Mendez, Puebla, which is situated on the southwestern border of the Totonaco region. The informants used for this paper have been exclusively from this town; the two principal ones were Fulgencio Cortes (14 years of age, now deceased) and Manuel Arenas (20 years of age). Both informants spoke Spanish and each had completed three years in the town grammar school.

Totonaco has not as yet been proven to have family relationship to any other Indian language of Mexico except Tepehua. Tepehua has a few interesting differences—especially the glottalized stops and affricates which parallel the usage of laryngealized vowels in Totonaco. Although the phonemic structure of the two languages is similar they are mutually unintelligible.

For the Totonaco, there appear to be three dialect areas, the largest being that found in and around the district of Zacatlan, Puebla. The second in size is the lowland dialect area of Veracruz with the Spanish speaking city of Papantla as market center. The third (with which the writer is least acquainted) is found in the most northern part of the state of Puebla and that adjoining section of the state of Veracruz. Pantepec is one of the important partly Indian towns of this dialect area. These three areas are isolated from each other especially the third from the other two. They are not wholly mutually intelligible.

The purpose of this paper is to present the phonemes and their phonetic modifications as found in Zapotitlán de Mendez of the dialect of Zacatlán. However, except for the action of the glottal stop and a few minor

items, this description is the same for the phonemes of any Totonaco speaker.

In the early stages of this investigation, I obtained considerable help from a Yale University Dissertation by Norman A. McQuown, 1940, A Grammar of the Totonaco Language (dialect of Coatepec, Zacatlán). I also wish to express my appreciation to Kenneth L. Pike and my colleagues of the Summer Institute of Linguistics for their valuable constructive criticism of this paper.

3. Syllable-nucleus phonemes.

3.1. Pure Vowels. There are six pure vowels which, in general, may be described as follows: All are purely oral. Three are short: /i/, /a/ and /u/. Three are long: /i·/, /a·/ and /u·/. The vowels /i/ and /i·/ are produced at a high-front tongue position. The vowels /a/ and /a·/ are produced at a low-central tongue position. The vowels /u/ and /u·/ are produced at a high-back tongue position. The back vowels have a slight degree of rounding. In analagous positions, the long vowels have a tendency to be produced at a lower tongue position than their corresponding short vowels. This is most noticeable with the vowels /a/ and /a·/. The short vowels are very flexible in quality and vary freely from their normal position to a more central one: /tihašli/ [tixʌšlI] *he rested;* /ti·hašli/ [ti˙·xʌšlI] *he passed by to rest;* /łkaka/ [łkʌkʌ] *peppery;* /łka·ka/ [łka·kʌ] *he is hot;* /hun/ [xun] *hummingbird;* /mu·n/ [mu˙·n] *forehead.*

These vowels are subject to the following variations conditioned by contiguous sounds or by positions in the word or utterance. (Fast forms are as described here, the slow forms tend to revert to the full normal quality heard apart from the conditioning position. For example: /tiyaya·w/ *we get it* in fast speech is: [tiˆyəˆya·wW] while its slow form is [tiyʌya·wW])

When the short vowels are contiguous to /y/, they are drawn toward a palatal position. /tiyay/ [tiˆyəˆyY] *he gets it;* /łkuyuy/ [łkuˆyuˆyY] *he burns it;* /tancayan/ [tʌndᵊəˆyəˆn] *eight animals.*

When the vowels /i/ or /i·/ are followed by /q/ or /nq/, they terminate in a very brief glide to a mid-central position. With the long vowel /i·/, this glide is more pronounced. /tiqusli/ [tiᵊˆɻɔsłI] *it flew;* /ti·qusli/ [te·ᵊkɔsłI] *it flew by;* /minqa·n/ [miᵊˆŋgɒ·n] *behind you;* /ti· nqusli/ [te·ᵊ ŋgɔsłI] *who flew.*

When the vowels /a/, /a·/, /u/ and /u·/ are contiguous to /q/ or /nq/, they are produced at a very low back tongue position. /šuquł/ [šɔɻɔł] *he paid it;* /šaqał/ [šaˆɻaˆł] *he wore it off;* /lunqa·w/ [lɔŋgɒ·wW] *we are cold;* /qu·luł/ [ɻɔ·˙luł] *he grew old.*

When the short vowels /a/, /i/, or /u/ occur in utterance-final position, they are completely voiceless. /snapapa/ [snʌpʌpʌ] *white;* /miki/ [mikI] *snow;* /stapu/ [stʌpU] *beans.*

3.2. Laryngealized vowels. Corresponding to the six pure vowels, there are six laryngealized vowels. The basic quality is the same, and the variants, free and conditioned are likewise the same except that the laryngealized ones do not unvoice finally and they have their special added laryngeal quality.

Laryngeal quality is of three types: (1) vowel followed by glottal stop,[1] (2) vowel followed by glottal stop but also affected by this glottal stop so as to be accompanied by a more or less rough glottal vibration or laryngealization (glottalization), and (3) vowel preceded and followed by a glottal stop with complete laryngealization of the vowel.

These three types are conditioned by the following surroundings:

When the laryngealized vowel is preceded by a voiceless consonant, the first type occurs, or a mild form of the second type with but slight laryngealization at the end

of the vowel. /pin/ [pi?n] or [pi$^{?}$?n] *peppers;* /šu·n/ [šu·?n] or [šu$^{?}$·?n] *bitter;* /kåka/ [ka?kʌ] or [kå?kʌ] *greens.*

When the laryngealized vowel is preceded by a voiced continuant, it may be completely laryngealized and the preceding continuant on its off-glide, is slightly assimilated to the laryngealized quality of the vowel. /wåy/ [wʌ?ʏ] or [wʌ$^{?}$?ʏ] or [w̥å?ʏ] *he eats* /tamå·ł/ [tama·?ł] or [tama$^{?}$·?ł] or [tam̥å$^{?}$·?ł].

When the laryngealized vowel is preceded by another laryngealized vowel, the second one receives complete laryngealization. /tå·ån/ [ta$^{?}$·?å?n] *he goes with him;* /lakåi·ł/ [lʌkʌ$^{?}$?i$^{?}$·?ł] *he accepted it.*

When two laryngealized vowels are separated by a voiced continuant, the second vowel is of the type with complete laryngealization, while the medial continuant is also slightly laryngealized. /tå·wåł/ [ta$^{?}$·?w̥å?ł] *he shared it;* /li·ni·yå/ [li$^{?}$·?-n̥i$^{?}$·?y̥å?] *you will die from it.*

When the laryngealized vowel occurs in phrase-initial position, an initial glottal stop occurs, and the vowel is completely laryngealized. /i·y/ [?i$^{?}$·?Y] *he buys it;* /ån/ [?å?n] *he goes.*

This word-initial glottal stop disappears in normal speech when a preceding consonant-final word is added. /kin åna·w/ [kin ʌ$^{?}$?na·wW] *we go.*

4. Syllable-margin phonemes.

4.1. Stops and Affricates. The stops /p/, /t/, /k/ and /q/ are produced in bilabial, alveolar, velar and back-velar positions respectively. /pupuy/ *it boils;* /ta·tah/ *father;* /kukuh/ *sand;* /šqaqay/ *it shines.*

The affricates /c/ and /č/ are produced in alveolar and alveo-palatal positions.[2] /c̥ici/ *warm;* /č či/ *hot.*

The stops and affricates are voiceless and unaspirated except under the following conditions:

When the stops occur in word-final position or immediately precede a consonant, they are aspirated (but preceding /s/, /š/ or /ł/, the aspiration is very slight or is absent). /pit/ [pit^{ʻ}] *you went;* /kkå·ł/ [k^{ʻ}ka$^{?}$·?ł] *I cut it;* /nakmin/ [nʌk^{ʻ}min] *I will come;* /sitpah/ [sit^{ʻ}pʌ] *he cut it again;* /l̥unqti/ [lɔ?nk^{ʻ}tI] *you were cold;* /capsʌ/ [t^{s}ʌp^{ʻ}sʌ] or [t^{s}ʌpsʌ] *he stacks;* /tukšli/ [tuk^{ʻ}šlI] or [tukšłI] *it broke.*

In a geminate stop cluster, the first may be either aspirated or unaspirated. When the first stop is unaspirated, there is close transition with only one closure for the two stops; the resultant is longer than a single stop. /kasitti/ [kʌsit·I] *cut it;* /laqqu·lun/ [la^{ˇ}k̟·ɔ·^{ˇ}lun] *old men.*

When preceded by a nasal and followed by the voiced variant of a vowel in the same word, both stops and affricates become voiced. /kimpa·n/ [kimba·n] *my stomach;* /ni·ntå/ [ni·ndʌ$^{?}$?] *no;* /kinkan/ [kingʌn] *nose;* /ånqů·y/ [?å?ŋ.gɔ$^{?}$·?Y] *they go;* /mincån/ [mind^{z}ʌ$^{?}$?n] *your heel;* /kinčuh/ [kind^{ž}u] *my tortilla.*

In these circumstances, the affricate may vary to a voiced sibilant. /ti·ncun/ [ti·nd^{s}un] or [ti·nzun] *goat;* /wančå/ [wʌnd^{ž}å?] or [wʌnžʌ$^{?}$?] *he spoke there.*

4.2. Sibilants. /s/ and /š/ are voiceless sibilants produced in alveolar and alveo-palatal positions respectively. /šu·ł/ *he skinned it* (*a large thing*); /su·ł/ *he skinned it* (*a small thing*).

4.3. Glottal fricative. /h/ has the following submembers:

In syllable-final position within a single word or at the end of a word in the middle of a phrase, /h/ may have friction of the general position of the vowel preceding it, and is much like English /h/. At times, however, the friction is very light indeed, and may even disappear entirely. In case the friction is inaudible, however, the phoneme is represented phonetically by timing, a kind of hole in the air or light pause. In the following examples, note

word-medial, and word-final types; note also the Spanish loan. /skuhmå/ [skuhmʌʔ] *he is working;* /kukuh kǔ/ [kukuh kuʔ] *it is still sand;* /pi·lah kǔ/ [pi·lʌh kuʔ] *it is still a town well* (Sp. pila).

The phrase-final variant is of the lightest type just described—i.e. inaudible—but since no other syllables follow it, the timing is not noticeable and the foreign ear tends to assume the presence of a mere final voiced vowel. Phonetically, the contrast of vowel plus /h/ to vowel without /h/ remains, since true phrase-final vowels unvoice completely but those followed by phonemic /h/ (even though inaudible) retain their voicing. In the following illustrations, note that some of the same words are used as appeared above and the phonemic pattern is the same, but that the phonetic data differs due to the changed position in the phrase. /kukuh/ [kuku] *sand;* /pi·lah/ [pi·lʌ] *town well.*

Contrast the preceding illustrations with the following, which have true phrase-final vowels. /kuku/ [kukU] *uncle;* /kuku kǔ/ [kuku kuʔ] *he is still an uncle.*

When it occurs in word-final position following a nasal, it actualizes as the voiceless counterpart of the preceding nasal.[3] /ma·nh wa̰/ [ma·nN wʌ̥ʔ] *that's all;* /kamh wah/ [kʌmM wʌ] *he becomes a baby.*

When it is followed by a vowel in the same word, it is a voiceless velar fricative. /haša/ [xʌšΛ] *he rests;* /tihi/ [tixiʔ] *road;* /ta·qhu/ [ta·qˈxU] *you plunged in.*

4.4. Nasals. /m/ and /n/ are voiced nasals produced in bilabial and alveolar positions. /namani·nan/ *he will dye;* /tantum/ *one animal;* /pałmå/ *refuse.*

They have the following variants:

When /n/ is followed by /k/ or /q/, it is produced in velar and back-velar points of articulation. /kinkan/ [kiŋgʌn] *nose;* /lunqnan/ [lɔŋkˈnʌn] *it is cold.*

When they are both followed and preceded by laryngealized vowels, they also receive the rough laryngeal quality. /månï·nånå/ [mʌ̰ʔnḭ̈ʔn̰ʌ̰ʔn̰ʌ̰ʔ] *you dye.*

4.5. Laterals. /l/ is a voiced lateral produced in alveolar position. It has a tendency to be slightly fricativized. This audible friction is more noticeable when it precedes vowels of [i] quality, or when /l/ occurs in the next syllable. /lu·wå/ *snake;* /li·li·y/ *he dances it.*

When it occurs between two laryngealized vowels, it receives some of their laryngeal quality. /wïlå/ [wḭ̈ʔl̰ʌ̰ʔ] *you are sitting down;* /tå·liyån/ [taˀ·ʔl̰ïʔy̰ʌ̰ʔn] *he takes it with him.*

/ł/ is a voiceless lateral fricative produced in alveolar position. /łu·wå/ *many;* /tałi·n/ *song.*

When it follows /n/, it is occasionally initiated by a slight stop due to lack of synchronization. /tanłi·n/ [tʌnᵗłiˀ·ʔn] or [tʌnłiˀ·ʔn] *dance;* /kinłahał/ [kinłʌxʌł] or [kinᵗłʌxʌł] *he beat me.*

4.6. Semivowels. /w/ and /y/ are voiced glides produced in bilabial and alveopalatal positions respectively. /ya·wah/ [ya·wʌ] *he stands it up.*

They are subject to the following variations:

When they are preceded and followed by a laryngealized vowel, they are laryngealized. /sqåwiwi/ [skå̰ʔwḭʔwḭʔ] *cool;* /łåwåniyå/ [ł̰ʌ̰ʔw̰ʌ̰ʔn̰ʔy̰ʌ̰ʔ] *you are doing it for him.*

When they occur in word-final position and also follow a pure vowel, they terminate in a voiceless off-glide. /ławay/ [łʌwʌyY] *he does it;* /ławaw/ [łʌwʌwW] *we did it.*

When they occur in word-final position preceded by a laryngealized vowel, they are completely voiceless. /ka̰·y/ [kaˀ·ʔY] *he cuts it;* /ka̰w/ [kʌˀʔW] *we (excl.) went.*

When /w/ is followed by a voiceless vowel, it is voiceless. /sputwi/ [sputˈWI] *we (incl.) finished.*

5. Sentence Intonation Patterns.

These intonation patterns occur at the end of a paragraph, or before a marked pause. Within a paragraph they seldom

occur, but the included sentences are more or less on a mechanical monotone.

There are three major intonations:

An information or supplement question takes a drop in pitch at the end of the query with the strongest stress on the interrogative pronoun if there is one. Symbol: /?/. /ti· nławał?/ ['ti· nɬawʌɬ] *who did it?;* /ča· mpa· ni· ławał?/ *and what if he didn't do it?.*

A yes-or-no question takes a rise in pitch at the end of the query. Symbol: /??/ /pa· ławał??/ *did he do it?;* /tu· ławał??/ *didn't he do it?.*

A matter-of-fact statement may be spoken on a purely level tone or have a slight drop of pitch at the end of the statement.[4] Symbol: /./. /wå· nławał./ *he did it;* /namin nčišků./ *the man will come.*

Other intonation types may be present, but have not been fully analyzed.

6. Sequence of phonemes.

6.1 Consonants which may appear in word-initial are:

Any single consonant before any single vowel except that /q/ does not precede vowels of [i] quality (/i/, /i·/, /ĭ/, and /ĭ·/), nor does /w/ precede vowels of [u] quality, nor does /y/ precede /i/ or /ĭ/.

The following word-initial clusters have been observed:

/k/ + any consonant: /khaša/ *I am resting;* /kkå·y/ *I am cutting it.*

/š/ + any consonant except /š/ or /s/: /šwan/ *he was saying;* /šta·n/ *possum.*

/s/ + any consonant except /s/, /š/, /č/ or /h/: /sła·n/ *pretty;* /stapu/ *beans.*

/ɬ/ + any consonant except /s/, /š/, /c/, /č/, /ɬ/, /h/ or /l/: /ɬmå·n/ *long;* /ɬkuy/ *it is burning.*

/n/ + /t/, /k/, /q/, /c/, /č/ or /ɬ/: /ntå· ni· ån/ (*there*) *where he goes;* /ča· nčů/ *and now.*

/m/ + /p/: /mpala kit/ *like me.*

/k/ + any of the word-initial clusters listed above except those whose first member is /k/, /m/ or /n/: /kščik/ *in his house;* /ksmani·y/ *I get accustomed;* /kɬtanka/ *he was pulling it.*

6.2. Consonants which may appear in word-final are:

Any single consonant except /l/, /c/ or /č/, except that /h/ does not follow a long-vowel phoneme.

The following consonant clusters have been observed: /ps/, /ks/, /nk/, /nks/, /mh/ and /nh/. The clusters /mh/ and /nh/ have only been observed in phrase-medial position. /pa·caps/ *wall;* /paks/ *all;* /låmånk/ *pitcher;* /tånks/ *correct;* /åqtumh kå·ta/ *one year;* /minh paša/ *he comes to bathe.*

6.3. Consonants which may appear in word-medial are:

Any single consonant except that: /q/ does not precede vowels of [i] quality; /w/ does not precede vowels of [u] quality; /y/ does not precede /i/ or /ĭ/; /h/ does not follow a long vowel phoneme; /w/, /y/, /m/, /n/ or /l/ do not precede word-final /i/, /a/ or /u/.

The following consonant clusters occur in word-medial:

One of the set /p, t, k, q, s, š, ɬ, h/ followed by any other consonant if we exclude from these combinations the following: [ss], [šš], [sš], [šs] and [hh] which do not occur. /sitkan/ *it gets cut;* /muhmuh/ *owl;* /capsa/ *he piles it up;* /maspah/ *it rots again.*

/n/ followed by one of the set /t, k, q, c, č, ɬ/, and /m/ followed by /p/. /tantum/ *one animal;* /kinci/ *my mother;* /tanlu·wå/ *many animals;* /šumpi/ *porcupine.*

One of the set /p, t, k, q/ followed by one of the set /s, š, ɬ/ followed by any consonant except /s/ or /š/.[5] /maqsqut/ *lamp;* /pukłni/ *cloud;* /tuqłli/ *he touched it;* /paqłča/ *tomato;* /půtšti/ *you plucked it;* /capsmå/ *he is piling it.*

/n/ followed by one of the set /k, q/ followed by one of the set /s, š, ɬ/ followed by any other consonant except /s/ or /ɬ/.

/cinksyah/ *he stands hungry;* qůnqšmå/ *she is braiding;* /tinkši/ *he shook it.*

/n/ followed by one of the set /k, q/ followed by any other consonant. /lunqnan/ *it is cold;* /cilinksa/ *it resounds;* /šunkpah/ *it receded again.*

6.4. Vowels. There are four general restrictions that apply to the distribution of vowels: the long vowels never precede /h/; the vowels of [i] quality do not occur after /q/; the vowels of [u] quality never follow /w/ nor does /i/ or /ĭ/ follow /y/. Apart from these restrictions, the following are the possibilities of vowel occurrence:

6.5. Any single laryngealized vowel may appear in word-initial. The pure vowel phonemes do not occur in word-initial position. /ůkšiła/ *he sees it;* /å·šuš/ *garlic;* /ĭta·t/ *half;* /ů·n/ *wind.*

6.6. Word-initial vowel clusters are rare and have only been observed with the morpheme /å·/ (meaning *other* when prefixed to a noun like word and *yet* with a verb) as first member. These clusters are ambisyllabic. /å·ita·t/ *the other half;* /ni· å·ůkšiła/ *he hasn't seen it yet.*

6.7. Any single vowel pure or laryngealized may appear in word-final, except that in word-final position /i/, /a/, or /u/ never follow a voiced continuant. /škuta/ *sour;* /qałahu· *down below;* /lu·wå/ *snake;* /li·wå·/ *meat.*

6.8. The few vowel clusters observed have been those with the morpheme /ĭ/ as second member. These clusters are ambisyllabic. /låkåi/ *you accepted it;* /tii/ *you bought it.*

6.9. Any single vowel, pure or laryngealized, may appear in word-medial. /načuwinampalaya·ča·w/ *good bye;* /li·må·cånqånåniqů·yå/ *you forgive them;* /načůwinåmpalåyå·tit/ *you (pl.) will speak again.*

6.10. Clusters of two vowels, both of which are laryngealized. These clusters are ambisyllabic. /på·ita·t/ *halfway good;* /lakåi·y *he accepts it;* /tå·ån/ *he goes with another;* /li·i·y/ *he buys with it.*

7. TEXT

1. čå·tum 2. ncůmå·t 3. nka·na· 4. li·laqati·t 5. štaka·šta·yah. 6. åkšni· 7. nčů· 8. ntiqåli·ł 9. ščišků, 10. ni· å·ł 11. štå·čunå· 12. šlaqå·nan 13. sa·mpi· 14. ni· skuha· nčišků. 15. luwa šałkitit 16. šwani·t. 17. ča· nčů· 18. maqtum 19. maqči·ya· 20. nticukuł li·puwan 21. mpuska·t. 22. sa·mpi· 23. ni· šånan 24. ntu· 25. šmakati·y 26. pus 27. ticukuł waniy 28. šci, 29. nakintå·måqtaqåłå· 30. nkilaqsqåtå·n 31. sa·mpi· 32. wiš minkwi·ntah. 33. ma·ski tu· 34. nå· må· 35. kli·pa·ti·må· nčů, 36. wå· ntu nłahay 37. kinqu·lů, 38. paks 39. wå· nki·tå·wå· 40. štå·la·pa·ški·n 41. ča· nčů· 42. nkit, ni· å·ł čunå 43. kiůkšiła. 44. pus wan šci, 45. ni· kalåkapalå·tnånti. 46. katå·pa·šůwå·nå·li·pi. 47. ni· nčů· namåqaštaqå? 48. sa·mpi· 49. minqu·lů. 50. ča· nčů· 51. wå· mpuska·t, 52. åkšni· nčunå wanikah, 53. maqči·ya· ncukuł tåsah. 54. pi·tå 55. šli·ka·nah. 56. åkšni· ntaspitli·šqu·lů, 57. ka·na· snů·n nqåči·y. 58. maqči·ya· ncukuł nika. 59. na· tiławał šli·tu·ntuh. 60. luwa maqat kå·kiwi·n 61. ntå· ni· nka·na· kå·pu·lanqa· 62. ntiki·må·åqcånqa·tapu·li·ł 63. yå 64. timinčå· nčišků· 65. ča· nčů· 66. mpuska·t 67. kah 68. kštampišni· 69. sipih 70. kłtatay. 71. na· čå·li čå·li 72. šqałtawåqåy. 73. kskini· 74. li·ła·n 75. mpi· 76. ni· tu· nåån maqa·qłah 77. mpala 78. wånani·n. 79. pus wåtiyå· 80. šwåy 81. šli·staqwånan 82. ntu· ščipay å·nimå·łnå. 83. čů· wå· kšu·wå, na· wå· šmaklakaskin. 84. šli·tałapay. 85. ča· nčů· 86. maqtum ntilakapa·stakli· šqu·lů, 87. nakån pucananiy nkimpuska·t 88. ntå· ni· ktiki·maqåł. 89. ʔpa· 90. lamåh 91. ku čů? 92. su ni·ni·t tå? 93. mat 94. puwan. 95. pus mat 96. či· 97. tiåł. 98. åkšni· nčů·

ntilakapułłi, 99. titå·tanůqłli· špuska·t. 100. ča· nčů· 101. mat waniy, 102. tu·wan 103. kimpuca·naniyå? 104. ʔpa· minkwi·ntah 105. la·nłå· klamåh? 106. tima·štuł šmači·tih. 107. timaqni·ł nčišků. 108. ča· nčů· wå· mpuska·t 109. wå· šlå· mů·šni. 110. šli·på·ån 111. ticukuł tå·la·maqtaqåła.

1.one-human-being 2. girl 3. truly 4. to-be-desired 5. she-was-attiring 6. when 7. now 8. she-had 9. her-man 10. no more 11. its-sameness 12. she-was-dressing 13. because 14. no he-works man 15. very of-the-lazy 16. he-was 17. and 18. one-time 19. extremely 20. she-began to-be-sad 21. woman 22. because 23. no was-existing 24. what 25. she-was-subsisting-on 26. well 27. she-began to-say-to-her 28. her-mother 29. you-will-take-care-of-them-with-me 30. my-children 31. because 32. you your-fault 33. although what 34. like this 35. I-am-suffering now 36. it what he-earns 37. my-husband 38. all 39. it he-goes-and-shares-with-them 40. his-loves 41. and 42. I no more thus 43. he-looks-at-me 44. well says her-mother 45. no be-upset 46. go-along-on-friendly-terms-with-him 47. where now you-will-leave-him 48. because 49. your-husband 50. and 51. the woman 52. when thus it-was-said-to-her 53. extremely began to-cry 54. it-must-be-so 55. true 56. when he-returned her-husband 57. truly desperately he-is-drunk 58. extremely he-began to-hit-her 59. also he-did-it foolishness 60. very far-away jungle 61. there where truly an-overgrown-place 62. he-went-and-returned-from-making-her-lost-and-wander 63. with-that 64. he-returned-from-there the-man 65. and 66. woman 67. just 68. at-its-foot 69. cliff 70. she-was-sleeping 71. also tomorrow tomorrow 72. she-was-praying 73. she-was-asking-it 74. a-favor 75. that 76. no what will-go to-frighten 77. as 78. eaters 79. well that-very-thing 80. she-was-eating 81. she-was-living-on 82. what she-was-catching-it animals 83. now it its-skin also it she-was-making-use-of 84. she-was-covering-herself-with-it 85. and 86. one-time he-thought-of-her her-husband 87. I-will-go to-make-a-search-for-her my-wife 88. there where I-went-and-returned-got-rid-of-her 89. is-it 90. she-is-about 91. still now 92. or she-has-died already 93. it-is-said-that 94. he-thinks 95. well it-is-said-that 96. and 97. he went 98. when now he-arrived-at-the-place 99. he-encountered-her his-wife 100. and 101. it-is-said-that she-says-to-him 102. why 103. you-are-coming to-make-a-search-for-me 104. is-it your-fault 105. how I-am-living 106. she-took-it-out her-machete 107. she-killed-him the-man 108. and 109. the woman 110. she his monkey 111. from-henceforth 112. she-began to-look-after-him

Free Translation:

There was a girl who attired herself in a way that was truly desirable to look upon. Then when she had a husband, she did not dress the same any more, for the man did not work because he was lazy. Now at one time she became sad for there did not exist any means of subsistence. So she began to say to her mother, "You must help me take care of my children for it is your fault. Although I am suffering here now like this, my husband spends all that he earns with his loves. And as for me, he does not notice me any more." So her mother said, "Don't be disturbed and upset. Keep on friendly terms with him. How can you leave him now? For he is your husband." And when it was put to the woman in that way, she began to cry very much for it was so of course. When her husband returned he was truly desperately drunk. He began to hit her terribly. Then he did a foolish thing. He took her and lost her to wander in a far off jungle where it was densely overgrown. Then the man returned from his mission. And the woman just slept at the foot of an overhanging cliff. Also, day after day she prayed asking the favor that nothing should come to make her frightened like man eating animals. Now, she supplied

her eating necessities right from the very animals she caught. She also made use of their skins which she used to cover herself with. But there came a time when her husband thought of her. "I will go to make a search for my wife at the place where I went and got rid of her. Could she even now be still alive? Or could she have died by now?" It is said that those were his thoughts. Well, it is also said that he went. Now, when he arrived at the place, he met his wife. It is said that she said to him, "Why do you come to make a search for me? Can it be that you are to blame for my living as I do?" She drew her machete and killed the man. And the woman from then on was the property of a monkey and took care of him as his wife.

8. FOOTNOTE DISCUSSSION

[1] In this paper, a phonetic glottal stop is treated as a part of a vowel nucleus, rather than a separate consonant. Distribution of glottal stop or glottal influence (laryngealization) is fully covered in the statements describing the variants of the laryngealized vowels.

The alternate possibilities would have been to have treated the glottal stop as a separate consonant on a par with /p/, /t/, /s/, /m/, and so on, but one which differs widely from them in its distributional characteristics. These differences are so striking, that the nuclear treatment seems to reflect better the structure of the language.

In order to see various peculiarities of glottal stop which a purely consonantal hypothesis would have to take into account, note the following items:

Frequency: The glottal stop is used with much greater frequency than any single consonant. In a sample text containing 1834 syllables, 732 of them contained a glottal stop following the syllabic.

Distribution: Glottal stop, as a consonant, would nearly double the number of consonant clusters, since it can occur before any word-medial or word-final single consonant or cluster. [tʌ?nu?] /tånů/ *that there;* vs [tʌnu?] /tanů/ *different;* [ka·?W] /kå·w/ *we cut it;* vs [ka·wW] /ka·w/ *let's go;* [pʌ?šni?] /påšni/ *pig;* vs [pʌšni?] /pašni/ *washed;* [pa˃?ḳłI] /påqłi/ *he shattered it;* vs [pa˃ḳłI] /paqłi/ *it blossomed.*

Furthermore, the distribution of /p/, /t/, /q/, /y/, /w/, /m/ and /n/ would seem odd, in that they would appear finally in words only singly after a vowel or in clusters with [?] preceding them, whereas the statement might appear less strange that they occur singly, word-finally, after either laryngealized or nonlaryngealized nuclei.

Appearance in Spanish Loans: In adapting Spanish loans to the phonemic system of Totonaco, laryngealized vowels are sometimes (although nonpredictably) substituted for the non-laryngealized types of Spanish. This involves the phonetic addition of glottal stops—the only addition occurring in loans, except for vowel length which is also a nuclear characteristic, and an occasional /h/.

With substituted laryngealized vowels: [?a·?ni?ma·?ł] /å·nimå·ł/ (Sp. animal) *animal;* [wi·?la] /wi·lah/ (Sp. Manuela) *Manuela;* [kwi·?rsa] /kwi·rsah/ (Sp. fuersa) *by necessity.*

With the nearest corresponding nonlaryngealized vowels of a three vowel system: [kʌpi] /kapih/ (Sp. café) *coffee;* [ša·pʌtU] /ša·patu/ (Sp. sábado) *Saturday;* [pisi·ndi] /pisi·ntih/ (Sp. Vicente) *Vincent.*

Morphological processes:

When there are alternate forms of a morpheme, and the particular usage is determined by whether or not the preceding morpheme terminates in a consonant or a vowel, the laryngealized nuclear forms with phonetic glottal stop act like the morphemes terminating in normal vowels. In the following illustrations, notice that the morpheme /-ni/ loses its vowel after nonlaryngealized and laryngealized nuclei, but not after a regular consonant: [ška + ni] /škan/ *it bit you;* [či·? + ni] /či·n/ *he tied it;* [nik + ni] /nikni/ *he hit you.*

In the next illustration, the same is true

for the morpheme /-wi/: [ška + wi] /škaw/ *we bit it;* [či·ʔ + wi] /čiw/ *we tied it;* [nik + wi] /nikwi/ *we hit it.*

In the following illustrations, morpheme-initial /y/ is retained after nuclear items, but not after marginal ones: [ška + ya·w] /škaya·w/ *we bite it;* [či·ʔ + ya·w] /čiya·w/ *we tied it;* [nik + ya·w] /nika·w/ *we hit it.*

In certain syntactic positions in the phrase, (for example; in exocentric, affirmative expressions) the word preceding the syntactic juncture lengthens a word-final vowel, but not a vowel followed by a consonant; laryngealized vowels are lengthened, ignoring the presence of phonetic glottal stop.

Endocentric

[snʌpʌpʌ šu·wʌʔ] /snapapa šu·wå/
the white fur;
[ḳaˀmʌʔ li·wʌʔtˀ] /qamå li·wåt/
tasty food;
[łkititˀ skuhniʔ] /łkitit skuhni/
a lazy worker.

Exocentric

[snʌpʌpa· šu·wʌʔ] /snapapa· šu·wå/
the fur is white;
[ḳa'ma·ʔ li·wʌʔtˀ] /qamå· li·wåt/
the food is tasty;
[łkititˀ skuhniʔ] /łkitit skuhni/
the worker is lazy.

In certain situations, a morphological process involves the substitution of a laryngealized vowel for a nonlaryngealized vowel; in terms of glottal stop as a regular consonant, this would necessitate a description of infixation of the glottal stop, which is a less convenient statement in view of the other characteristics of the language as a whole. Compare /li·smaniya·w/ *we (incl.) accustom ourselves to it* with /li·småniyå·tit/ *you (pl.) accustom yourselves to it.* Notice that the second person plural involves the laryngealization of each of the vowels which are preceded by a voiced continuant.

Dialect correspondencies: In certain (but not all) words where the glottal stop follows the syllabic nucleus for a speaker of the dialect described in this paper, that same word is spoken in Coyutla, another Totonaco town, with a glottal stop preceding the syllabic nucleus and in still another town, Concepción, it actualizes as a laryngealization of the syllabic nucleus without any full glottal stop present. /šů·n/ *bitter* actualizes as: [šu·ʔn] in Zapotitlán de Mendez, as [šʔu·n] in Coyutla, and as [šṵ̊·n] in Concepción. This would perhaps imply that for the language as a whole, including other dialects than the one described here, the glottal stop is not strictly fixed as to its sequence in the phonemes of the word, but is rather vaguely located anywhere within the syllabic nucleus.

Stability: Laryngealized vowels in word-medial position are somewhat unstable, varying occasionally to the non-laryngealized types. There is no dropping of medial consonants which would parallel the dropping of phonetic glottal stop occasioned by the phonemic substitution of the non-laryngealized for laryngealized nuclei. /wanił/ [wʌniʔł] or /wanił/ *he said it;* /łåwå/ [łʌʔwʌʔ] or /ławå/ *you did it.*

[2] There are several differences between the single phonemes /c/ and /č/, and the similar two-phoneme clusters /ts/ and /tš/.

In word-medial position, the syllable division takes place before /c/ or /č/, but between the stop and fricative of the /ts/, /tš/ combinations. /pucapi/ [pu.tˢʌ.pI] *you looked over there;* /pitsita/ [pit.si.tʌ] *he cut his neck part;* /tičikił/ [ti.tˢi.kił] *he shook it;* /pitšakał/ [pit.šʌ.kʌł] *he brushed the neck.*

The occlusion and fricative of /c/ and /č/ are shorter and more lenis than the occlusion and fricative of the consonant clusters /ts/ and /tš/.

The phonetic characteristics which are present in the clusters /ts/ and /tš/ as against /c/ and /č/ may be found also in the analagous clusters /ps/, /ks/, /pł/, /kš/ etc. Notice the syllabification in the following: /nipši/ [nip.ši?] *squash;* /lakšakał/

[lʌk.šʌ.kʌɬ] *he brushed them;* /lakłu·wå/ [lʌk.łu·.wʌʔ] *many things.*

[3] A problem still remains with this interpretation; the pattern pressure of final unvoicing of a continuant interpreted as /h/ is not completely consistent. The continuant phonemes /w/ and /y/ partially or completely unvoice in word-final position, but are not written */wh/ and */yh/ because there is no contrast with word-final completely voiced varieties; thus, /ławaw/ *we (incl.) did it* and /ławay/ *you do it* are phonetically [ławawW] and [ławayY]. With the nasals, however, there is a phonemic contrast between partially voiced and fully voiced word-final nasals which must be reflected in the phonemic orthography. Notice the difference of meaning carried by the phonetic voiceless nasals in the following illustrations: [škʌmM wʌ] /škamh wah/ *he became his son;* [škʌm wʌ] /škam wah/ *his son spoke;* [minN wʌn] /minh wan/ *he comes to speak;* [min wʌn] /min wan/ *he comes and speaks.*.

It is preferable to interpret this unvoicing as /h/, conditioned by the nasal, rather than postulate a new series of voiceless nasal phonemes. Further, it seems unnecessary to burden the description of partially unvoiced semivowels /w/ and /y/ as clusters of phonemes.

[4] The text given later has an abnormally high number, because it was dictated slowly. In rapid speech, this same text might have only a few of these intonation finals—with some informants, only at the places where they arbitrarily pause for breath.

[5] There are a few sporadic exceptions which do not make any pattern of non-permitted types. Presumably some of these will be encountered later.

REVIEWS

A Brief Introduction to Papago, a Native Language of Arizona. By William Kurath. pp. 43. 35 cents. University of Arizona Bulletin, Vol. XVI, No. 2 (Social Science Bulletin No. 13), April 1, 1945.

This modest pamphlet is addressed, not to the professional linguist, but to a rather vaguely defined audience of lay enthusiasts. As such, it will be discussed, not as a contribution to technical linguistic analysis, but as an exercise in popularization.

The author gives about equal space to discussion of the phonetics of Papago and of the morphology of Papago.

The discussion of phonetics, unfortunately, is little more than a justification of the orthography which the author has selected to represent Papago phonemes. The author rejects the standard phonetic alphabets and relies primarily on traditional English spelling. The justification offered for this procedure sometimes appears to consist of flogging the dying horse of overphoneticism, a pastime in which most modern linguists would be glad to participate, but at other times goes beyond what would be commonly accepted. For instance, when the author criticizes the orthography of the Indian Service Navajo readers on the basis that it "includes a profusion of diacritical marks which make the text appear very complicated and which could be reproduced on the typewriter only with most laborious care," he comes very close to abandoning the fundamental notion that an adequate orthography must represent all the significant phonetic distinctions of the given language. In his own orthography for Papago, the author has allowed his respect for the typewriter to lead him into what appears to this reviewer to be unstrategic and unnecessarily confusing methods of transcription. For instance, length is represented in a different way for each of the vowel phonemes. Long *a* is represented as *aa;* long *i* as *iy;* long *u* as *uw;* and long *ö* as *oe*. No distinction is made between *au* representing [ɔ] and the same digraph representing [ɔ·]. This last omission is especially remarkable, in view of the fact that the author represents the diphthongs [ɔy] as *oy* and [ɔ·y] as *auy*. The total result of this procedure, as far as I can see, would be to disguise completely from the ordinary reader the fact that length is a significant feature in Papago. Some of the resulting transcriptions of whole words border on the monstrous.

The discussion of morphology and syntax is not so much a description of the language as it is a description of the author's adventures in making the analysis. It consists almost entirely of loose ends, which could easily have been pulled together but which have not been pulled together. Thus, the morphemes of Papago are classified according to phonetic structure. The section on plural formation indicates clearly to the technical linguist the relevance of this classification of morphemes; but since a summary statement of the mechanics of plural formation, which could easily have been given, is not provided, it is all too likely that the point will escape the untrained reader. The concluding statement of the morphological section indicates that the author's intention is to convince the reader that in Papago "there is none of the poverty of expression that is so often popularly ascribed to the languages of so-called primitive peoples." In the reviewer's opinion, a more likely result will be to leave the casual reader with the impression that Papago speech habits are so unpredictably variable that they cannot be said to be subject to "rules."

In summary, it seems to the reviewer that Kurath has failed in three things which the reviewer believes essential to a successful

popular presentation of the structure of any language:

1. He has failed to make sense of the phonetic system. This may be due, in part, to the fact that he has not decided on the nature of the audience for which he is writing. During the war years linguists have gained considerable experience in devising orthographies which will be effective with audiences ranging from those who will spend approximately twelve hours gaining a control of basic phrases and sentences, to those who will spend approximately 360 hours of intensive practice in an attempt to acquire a worthwhile practical command. The tactics of transcription have been adapted to the needs and capacities of the audience. In the case of the latter type of audience at least, the almost universal experience is that compromises with phonemic orthography are not worthwhile.

2. The author has failed, in his sections on morphology and syntax, to communicate to the reader that sense of insight, of detection of a pattern, which is the linguistic analyst's chief reward for the labor of analysis.

3. Although the author avows the intention of avoiding technical terminology, he uses such terms as "phoneme" and "morpheme," with the bare explanations that the first is "the minimum unit of distinctive sound feature" and that the second is "the minimum unit of morphologic structure."

Having had the experience of describing the phonemic and grammatical structure of a non-Indo-European language to lay audiences, the reviewer feels strongly the importance of avoiding technical terminology, while at the same time conforming to the standards of the scientific approach to the description of languages. He realizes also the difficulties involved but is convinced that the task is not only possible but decidedly worthwhile. Popularization has been, and may easily continue to be, an important and challenging enterprise for the professional linguist. In the reviewer's opinion, any linguist who is willing to sell linguistics short by taking the attitude that the public is entitled to something less than what the professional audience will accept, and who is not willing to provide the public a detailed, but non-technical, account of the reasons for his procedure, is dodging responsibilities. While popular linguistic presentations may never appeal to the broad public that similar efforts in other fields of science have done, the principles involved are the same.

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ETNOGRAFIA E LÍNGUA TUPÍ-GUARANÍ, N° 1–5, *in* Universidade de São Paulo, Faculdade de Filosofia, Ciências e Letras, Boletins XI, XXIII, XXIV, XXXIII, XLVI. São Paulo, 1939–44.

N° 1: Plínio Ayrosa, Dos índices de relação determinativa de posse no tupí-guaraní. São Paulo, 1939. 94 pp.

N° 2: Plínio Ayrosa, Poemas brasílicos do Pe. Cristóvão Valente, S. J. (Notas e tradução). São Paulo, 1941. 51 pp.

N° 3: M. de L. de Paula Martins, Contribuição para o estudo do teatro tupí de Anchieta. Diálogo e trilogia. (Segundo manuscritos originais do Sec. XVI). São Paulo, 1941. 73 pp.

N° 4: Plínio Ayrosa, Apontamentos para a Bibliografia da língua tupí-guaraní. São Paulo, 1943. 306 pp. with 31 photoplates.

N° 5: Carlos Drumond, I. Designativos de parentesco no tupí-guaraní, II. Notas gerais sôbre a ocorrência da partícula tyb, do tupí-guaraní, na toponímia brasileira. São Paulo, 1944. 77 pp.

The first five volumes of the publications of the Department of Tupí Anthropology and Language are proof of the considerable interest that the University of São Paulo is showing for the study of this South American Indian language. This interest seems to be centered, however, rather on the history of

the coastal Tupí and on the study of 16th–18th century documents, than on a synchronic analysis of the language with the help of native speakers.

Three of the volumes are written by Plínio Ayrosa, chairman of the department, the other two volumes by his assistants.

Plínio Ayrosa's Dos índices de relação determinativa de posse no tupí-guaraní describes concrete-relational prefixes in 16th–17th century Tupí-Guaraní, which at the time was the generally spoken language (língua geral) of the Brazilian Atlantic coast. His exposé is based mainly on the grammars of three contemporary authors, the Jesuit Fathers Joseph de Anchieta, Antonio Ruiz de Montoya and Luis Figueira. He presents their ideas briefly and gives a general statement about the exactness and reliability of their work (they were handicapped by lack of linguistic method and excessive reliance on Latin grammatical principles). The Jesuit Fathers not only contributed grammars of the language, but actually acquired command of it and used it for mission literature, which, in the opinion of the author, gives their descriptive work added competence. Ayrosa, however, is not content to quote their ideas on the subject which he considers one of the most important problems of Tupí linguistics, but gives a summarized treatment of his own of the prefixes in question.

There are two classes of such prefixes as Ayrosa sees it. They represent two degrees of specialization of relation. The first class of prefixes contains only one, a general determinative prefix, fulfilling as Ayrosa puts it, the functions of the Portuguese definite article. This prefix occurs before vowel-initial stems as /t/; before consonant-initial stems, its morpheme alternant is zero: /esá/[1] *eye, eyes,* /tesá/ *the eye, the eyes;* but: /mbaé/ *thing,* /mbaé/ *the thing.* Occurring after what Ayrosa terms pronouns (of the first and 2nd person, sing. and plur.), or after a noun or nominal expression, the prefix /t/ has a morpheme alternant /r/ before vowel-initial stems, and a morpheme alternant zero before consonant-initial stems: /ʂe resá/ *my eyes,* /nde resá/ *your* (sing.) *eyes,* /kun,ã resá/ *the woman's eyes;* but: /ʂe mbaé/ *my thing,* /nde mbaé/ *your* (sing.) *thing,* /abá mbaé/ *the man's things.*

The second class of prefixes is represented by two concrete-relational prefixes, one of them relating a noun or nominal expression to a noun or nominal expression other than the subject of the phrase, and the other relating a noun or nominal expression to the subject of the phrase. The first prefix has the morpheme alternants /h/[2] before vowel-initial stems, and /i/ before consonant-initial stems: /hesá/ *his* (eius) *eyes;* /imbaé/ *his* (eius) *thing.* The second prefix has the morpheme alternants /gu̯/ before vowel-initial stems and /o/ before consonant-initial stems: /gu̯esá/ *his* (suus) *eyes;* /ombaé/ *his* (suus) *thing.* Other possible cases of morpheme alternance are listed by the author as exceptions. Then the author shows that verbal nouns follow the same pattern of prefixation, with the exception that consonant-initial consonant-final stems having the zero alternant of the prefix of the first class also have a suffix /a/ as part of that same morpheme: /beráb/ *glow,* /berába/ *the glow,* /ʂe berába/ *my glow.* Unfortunately, in his treatment of the syntax of these prefixed expressions, Ayrosa gives no translation or analysis of the examples, which makes it difficult to follow his procedure. He quotes six rules for the correct use of the prefixes, five of which he has accepted from Father Paulo Restivo, an 18th century author who has edited, commented upon and enlarged Montoya's work. They underline the necessity of keeping apart the two suffixes of the second class.

[1] The author uses a Tupí orthography based on conventional Portuguese spelling. A phonemic transcription is attempted here instead.

[2] Ayrosa calls this phoneme an aspirated /h/ (pp. 19, 20, fn. 19).

At the end of the volume, Ayrosa presents a bibliography of 149 ancient and more recent items.

Plínio Ayrosa's Poemas brasílicos do Pe. Cristóvão Valente, S. J., is a transcription in simplified spelling and analysis of four religious poems in Tupí by Father Cristóvão Valente, outstanding Jesuit missionary of the 17th century, first published probably in 1618. The analysis consists of going through the text line after line and giving some grammatical components of the words in the text, together with examples of similar words elsewhere in the language and in other dialects. Although the words are analyzed into what appears to be their component morphemes, these morphemes are described inadequately and sometimes not at all, and a number of facts are taken for granted that to this reviewer would warrant further statements. Thus, line 4 of the first poem, reading /ʒesú, ṣe posánga ĩmána/[3] is analyzed as follows: /posánga/ is one of the "variants" of the verb /posã́/ meaning *to cure*, occurring also in the forms /pohãng/, /posãng/, /mohãng/. As a noun with short final vowel it means *remedy, medicine.* /ĩmána/, composed of /ĩmã́/ + /ána/, means *what is ancient.* The whole line is translated in another place as meaning *Jesus, my ancient remedy.* From Ayrosa's volume on concrete-relational prefixes can be seen that /ṣe/ is a personal pronoun type morpheme, which is followed by the stem /posãng/ with the zero alternant of the prefix of the first class and the suffix /a/, second part of the determinative morpheme used with verbal-noun stems. As far as the other form quoted in the analysis is concerned, lacking a description of its component morphemes as stated there, its structure remains unclear. It seems that from a descriptive standpoint, the analysis leaves much to be desired. A translation of each poem follows the analysis.

[3] The letter /y/ in Ayrosa's Tupí orthography probably represents the unrounded low front vowel /ĩ/ as in Russian or Turkish, judging by the descriptions given by Carlos Drumond, op. cit., pp. 58–60.

Paula Martins' Contribuição para o estudo do teatro tupí de Anchieta consists of the presentation and analysis of two short, medieval passion type plays by Father Anchieta, author of the above-mentioned grammar, from a manuscript held by the Society of Jesus in Rome, photostat of which was used by author. The analysis is very much of the same type as that of Plínio Ayrosa in the previous volume, except that Paula Martins adds a metrical analysis of the verse form of the Dialogue.

Plínio Ayrosa's Bibliografia da língua tupí-guaraní is a critical bibliography listing 585 items from the 16th century to date. The items are arranged in alphabetical order of authors and under the authors, in chronological order of publication. Titles are given exactly as they appear on the title pages. Bibliographic descriptions especially of volumes the author considers important are very exact; 31 photoplates, mainly representing title pages of rare items, add to the interest of the bibliography. As far as can be seen, the items are well chosen. Short descriptions of the items are based on the author's reading experience and are strictly factual. A list of sources and an alphabetical index of places of publication are also included.

The first of Carlos Drumond's two articles, Designativos de parentesco no tupí-guaraní, deals with Tupí kinship terms which are presented on the basis of several vocabularies from the 17th–19th centuries. After a short preface, a Portuguese-Tupí list of terms is presented, and then a list of 174 Tupí terms with Portuguese translations, both in alphabetical order. Notes giving an analysis similar to that of Ayrosa and Paula Martins follow the Tupí list, giving some descriptive and much comparative material for each of the 174 terms, with references to the various vocabularies from which the terms were taken.

His second article, Notas gerais sôbre a

ocorrência da particula tyb, do tupí-guaraní, na toponímia brasileira, first establishes the meaning of /tĩb/[4] as being *place of, place where there is plenty of*. Then, the various phonetic changes to which that stem has been subjected are stated. Finally, place names are listed in order of the changed derivatives of that stem. At the end of the article, Drumond presents a table of the various derivatives of /tĩb/ and the number of place names derived from each of them in each State of Brazil.

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L'ANALYSE STRUCTURALE EN LINGUISTIQUE ET EN ANTHROPOLOGIE. By Claude Lévi-Strauss. Word 1.33–53 (1945).

LOS INDIGENAS Y LA REPUBLICA MEXICANA. LA POLITICA INDIGENISTA DEL P.C.M. By Ramon Berzunza Pinto. Mexico, D. F., 1941.

EXTENSIÓN GEOGRÁFICA DEL DIALECTO MAYA-CHONTAL. By Alberto Ruz Lhuillier. Escuela Nacional de Antropologia. Publicacion No. 2. Mexico 1944.

LINGÜÍSTICA COLOMBIANA. FAMILIA "ZAPARO" O "GAE". By Sergio Elias Ortiz. Universidad Catolica Bolivariana 5.97–108 (1940).

LINGÜÍSTICA COLOMBIANA. FAMILIA CHOKÓ. By Sergio Elias Ortiz. Universidad Catolica Bolivariana 6.46–77 (1940).

LINGÜÍSTICA COLOMBIANA. FAMILIA WITOTO. By Sergio Elias Ortiz. Universidad Catolica Bolivariana 8.379–409 (1942).

LINGÜÍSTICA COLOMBIANA. FAMILIA GOAHIBO. By Sergio Elias Ortiz. Universidad Catolica Bolivariana 9.155–81 (1943).

INFLUENCE OF AREA IN AMERICAN INDIAN LINGUISTICS. By C. F. Voegelin. Word 1.54–8 (1945).

JEFFERSON AND THE LANGUAGE OF THE AMERICAN INDIAN. By Mabel Morris. Modern Language Quarterly 6.31–4 (1945).

The French social anthropologist Lévi-Strauss points out that structuralism (a scientific approach long ago in use in geometry, physics, biology, and psychology) which studies—in contrast to the earlier method of mere description of a simple combination of isolated elements—the unified system in its totality, was formulated and applied, among the social sciences, in linguistics first of all.[1] Possession of a positive method of scientific analysis and a clear cognizance of the matter to be analyzed, place linguistics in a special position among the social sciences. Lévi-Strauss transposes here very successfully the principles of modern linguistics into the field of social anthropology, particularly in their application to the analysis of kinship systems. Beside the system of relationship terms, he postulates quite another system, a system of attitudes. Although the diversity of possible attitudes in interpersonal relations

Concerning the phoneme /ĩ/, see fn. 3.

[1] On the development of structuralism, cf. Ernst Cassirer, The Concept of Group and the Theory of Perception, Philosophy and Phenomenological Research 5.1–35 (1944); on the applications in linguistics, cf. H. J. Pos, Perspectives du structuralisme, TCLP 8.71–8 (1939); Viggo Brøndal, Linguistique structurale, Acta Linguistica 1.2–10 (1939); also, Ernst Cassirer, An Essay on Man (New Haven, 1944), in general the chapter on Language, and especially pp. 122 ff. When this part of the study of linguistics is not known or not appreciated by ethnologists, the possible contributions which linguistics may make to general anthropology are lost,—and nothing is gained by a denial of a constituent discipline within a larger field. Anthropology may be regarded as a kind of holding company having actual constituents A, B, C, D . . . (ethnology, archeology, linguistics, and so forth). Now, it sometimes happens that a member of A makes disparaging remarks about C, or excludes C, or regrets that the members of C have not contributed to A, or to the company as a whole, in any significant way. For a rather unhappy example of this, see Ralph Linton, The Science of Man in the World Crisis (New York, 1945), pp. 7–8.

(with regard to the maternal uncle, for example) is practically unlimited, the actual attitudes which exist in a given culture are definitely and definably limited, and combine into variously structured systems. The anthropologist asks: why does a given culture select certain elements out of the many and what are the principles according to which it combines them? Lévi-Strauss shows further how elements can be broken down into even smaller, distinctive features. The contribution of linguistics toward a solution of cultural problems, as Lévi-Strauss so well perceived, lies in this: it developed and served as testing ground for the perfection of an instrument of research which furnished rigidly exact statements hitherto impracticable in the study of human relations. Its diffusion has begun.

Pinto describes the Mexican Communist Party's policy with respect to ethnic minority groups in that country. The native population is divided into fifty-two linguistic groups, five of which are spoken by over 150,000 people: Aztec (670,000), Maya (280,000), Otomí (219,000), Zapoteco (217,000), and Mixteco (172,000); fourteen groups include from 20,000 to 100,000 speakers: Totonaco, Mazahua, Mazateco, Tarasco, Huaxteco, Tzeltal, Tzotzil, Yaqui-Mayo, Mixe, Tarahumara, Chinanteco, Mame, Zoque, and Popoloca. The program includes provisions for the scientific study of each language in Mexico, and there are statements advocating the use of the local dialect in both social life and public administration, as well as in bilingual schools.

Examination of the geographic extent of Chontal, here considered as a dialect of Maya, in the light of modifications brought forth by the author reveals that the language is spoken in a territory which forms a physiographic and hydrographic unit. This leads to the supposition that the region once corresponded to a natural unit containing a population speaking one language and probably ethnically homogeneous, as archeological research should demonstrate. There are four maps following the discussion.

In his article on Zaparo, also called Gae, Ortiz summarizes all information to date concerning that linguistic group and calls for a renewed and serious study of it to determine with precision its dialects. The bibliography of five general and twenty-six specific items which follows seems useful for preliminary orientation of the prospective field worker.

The paper on Chokó contains a sketch of previous research, an outline of the grammar, and a comparative vocabulary of the dialects. To Rivet's seventeen references Ortiz adjoins Lehmann's fifteen, and adds twenty-four bibliographic items of his own.

The study on Witoto follows the pattern of the paper on Chokó. To the bibliography of twenty-nine items now add the contribution of Harrington (cf. IJAL 11.66–8).

Guahibo is examined from the same point of view, with brief statements about grammatical features and a comparative vocabulary. Thirty-nine references are given.

Voegelin takes up the question of linguistic area and how it influenced the study of five linguistic families: Athabascan, Salish, Uto-Aztecan, Algonquian, and Siouan.

Morris assembles evidence indicating Thomas Jefferson's concern with American Indian languages. Her article will be of interest to historians of linguistics.

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